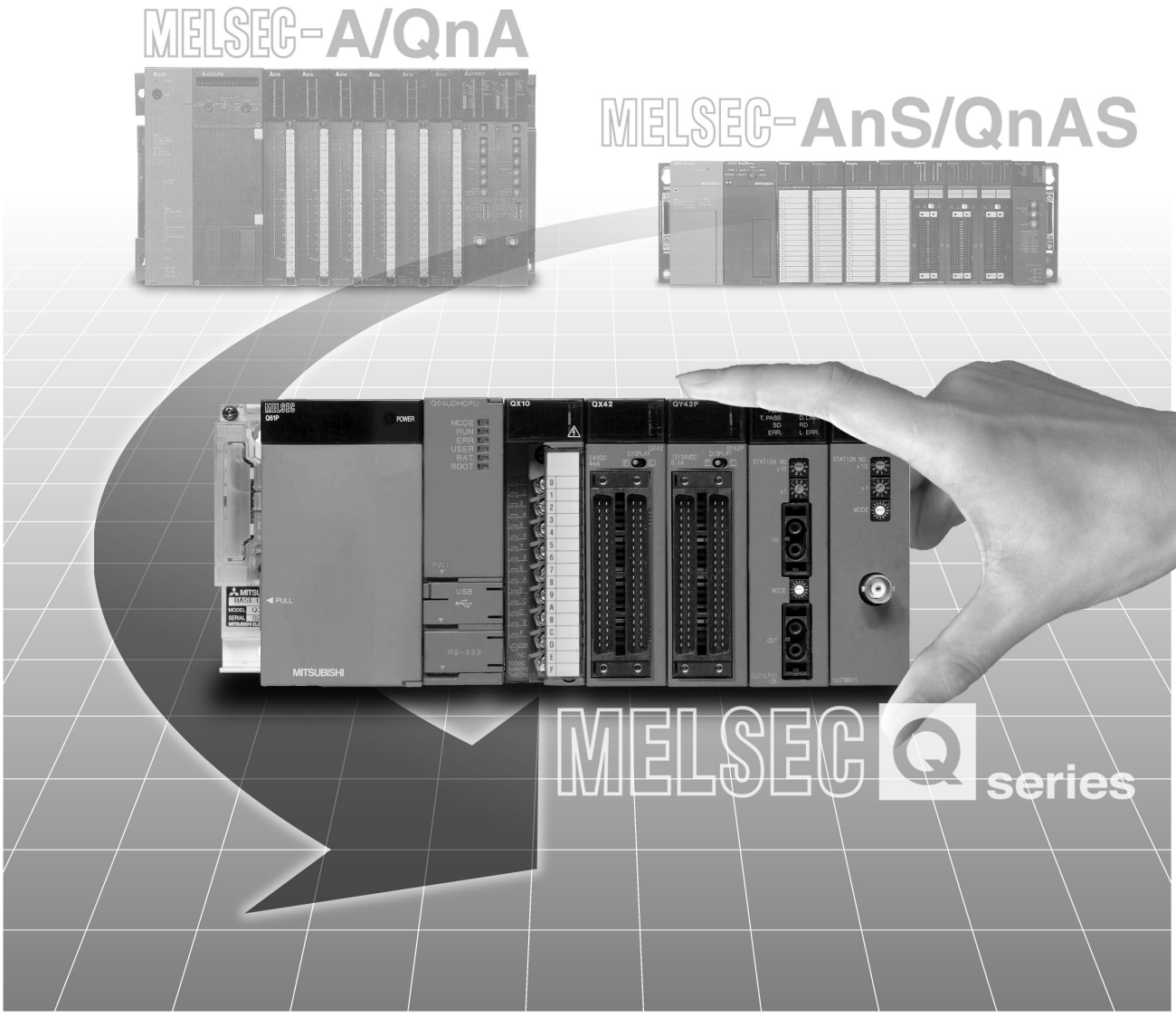
MITSUBISHI

Mitsubishi Programmable Controller

Transition from MELSEC-A/QnA (Large Type), AnS/QnAS (Small Type) Series to Q Series Handbook

(Communications)



2012 Edition

● SAFETY PRECAUTIONS ●

(Read these instructions before using this equipment.)

Before using this product, please read this handbook and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this handbook and then keep the handbook in a safe place for future reference.

[Design Precautions]

⚠WARNING

- For the operation status of each station at communication error in each station, refer to the respective manual for each station.
  The communication error may result in an accident due to incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to relevant manuals for the network. Erroneous outputs and malfunctions may lead to accidents.
  Not doing so can cause an accident due to false output or malfunction.
- When using the notification function, the pager receiver may not be contacted due to the frequency transmission status from the system setup environment and error on the receiver side.
  To ensure the safety of the programmable controller system, install a call circuit with a lamp display or buzzer sound.
- To prevent the malfunction of the programmable controller system due to harmful e-mails, take preventive measures (such as antivirus measures) so that the mail server for this module does not receive harmful e-mails.
- When performing the control of the programmable controller in operation (changing data) by connecting a peripheral devices to the CPU module or personal computer, etc. to the intelligent device module, configure an interlock circuit in a sequence program so the safety of the overall system is always maintained.
  Also when performing other controls of the programmable controller in operation (changing program and operation status (status control)), read this manual carefully and confirm if the overall safety is maintained.
  Especially, when this control is performed to a remote programmable controller from an external device, troubles that have occurred on the programmable controller side may not be able to immediately be handled if there is a data communication error.
  Define a troubleshooting agreement between external devices and the programmable controller CPU for data communication error occurrences, as well as construct an interlock circuit in the sequence program.
- When connecting a peripheral device to the CPU module or performing control of a programmable controller which is being run through a BASIC program, configure an interlock circuit in the sequence program so that the system overall is operating on the safe side at all times. Also before exercising other control (program change, operating status change (status control)) on the running programmable controller, read the manual carefully and fully confirm safety. Especially for the above control on the remote programmable controller from, an immediate action may not be taken for programmable controller trouble due to a data communication fault. In addition to configuring up the interlock circuit in the sequence program, corrective and other actions to be taken as a system for the occurrence of a data communication fault should be predetermined between and programmable controller CPU.

[Design Precautions]

⚠WARNING

- Do not write data into the "system area" of the buffer memory of intelligent function modules.
  Also, do not use any "use prohibited" signals as an output signal to an intelligent function module from the programmable controller CPU.
  Writing data into the "system area" or outputting a signal for " use prohibited" may cause a programmable controller system malfunction.

⚠CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
  They should be installed 100 mm (3.94 inch) or more from each other.
  Not doing so could result in noise that may cause malfunction.
- When using the module while values, such as buffer memory set values, are registered in the Flash ROM, do not turn off the power supply for the module loading station nor reset the programmable controller CPU.
  If the power supply for the module loading station is turned off or the programmable controller CPU is reset while any values are registered, the data contents in the Flash ROM become inconsistent and as a result the values must be set again in the buffer memory, etc. and reregistered to the Flash ROM.
  Also, this may cause failure and malfunction of the module.
- If a BASIC program is registered in the flash ROM in the module, do not power OFF or reset the programmable controller CPU at the station where the module is installed during registration.
  If it is performed during registration, the data contents in the flash ROM will be erratic and it will be necessary to reset the setting values, etc. in the buffer memory and register them again in the flash ROM. It could also cause the module to break down or malfunction.
- When changing the operating status of the programmable controller CPU (such as remote RUN/STOP) from the external device, select "Always wait for OPEN (Communication possible at STOP time)" for the "Initial timing" setting in the network parameter. The communication line will be closed when "Do not wait for OPEN (Communications impossible at STOP time)" is selected and the remote STOP is executed from the external device. Consequently, the programmable controller CPU cannot reopen the communication line, and the external device cannot execute the remote RUN.

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the general specifications contained in the user's manual of the CPU module to use.
  Using this programmable controller in an environment outside the range of the general specifications may cause electric shock, fire, malfunction, and damage to or deterioration of the product.
- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point.
  If the module is not installed properly, it may cause the module to malfunction, fail or fall off.
  Secure the module with screws especially when it is used in an environment where constant vibrations may occur.
- Tighten the screws within the range of specified torque.
  If the screws are loose, it may cause the module to fallout, short circuits, or malfunction.
  If the screws are tightened too much, it may cause damage to the screw and/or the module, resulting in fallout, short circuits or malfunction.
- Before mounting/dismounting the module, be sure to shut off all phases of external power supply used by the system.
  Failure to do so may cause product damage.
- Do not directly touch the conductive area or electronic components of the module.
  Doing so may cause malfunction or failure in the module.

[Wiring Precautions]

⚠CAUTION

- When turning on the power and operating the module after installation and wiring are completed, always attach the terminal cover that comes with the product.
  There is a risk of electric shock if the terminal cover is not attached.
- Perform correct pressure-displacement, crimp-contact or soldering for external wire connections using the tools specified by the manufactures.
  Incorrect connection may cause short circuits, fire, or malfunction.
- Be sure to fix communication cables or power supply cables leading from the module by placing them in the duct or clamping them.
  Cables not placed in the duct or without clamping may hang or shift, allowing them to be accidentally pulled, which may cause a module malfunction and cable damage.
- Shut off the external power supply (all phases) used in the system before connecting the AUI cable.
- When connecting a cable with connector to the module, connect the connector part to the module securely.
- Attach connectors to the module securely.
- Before connecting the cables, check the type o f interface to be connected.
  Connecting or erroneous wiring to the wrong interface may cause failure to the module and external devices.
- Tighten the terminal screws within the range of specified torque.
  If the terminal screws are loose, it may result in short circuits or malfunction.
  If the screws are tightened too much, it may cause damage to the screw and/or the module, resulting in fallout, short circuits or malfunction.
- When removing the communication cable or power supply cable from the module, do not pull the cable. When removing the cable with a connector, hold the connector on the side that is connected to the module.
  When removing the cable connected to the terminal block, first loosen the screws on the part that is connected to the terminal block.
  Pulling the cable that is still connected to the module may cause malfunction or damage to the module or cable.
- Be careful not to let foreign matters such as sawdust or wire chips get inside the module.
  They may cause fires, failure or malfunction.
- The top surface of the module is covered with protective film to prevent foreign objects such as cable offcuts from entering the module when wiring.
  Do not remove this film until the wiring is complete.
  Before operating the system, be sure to remove the film to provide adequate heat ventilation.
- Correctly solder coaxial cable connectors. Incomplete soldering may result in malfunction.

[Startup and Maintenance precautions]

⚠CAUTION

- Do not disassemble or modify each module.
  Doing so could cause failure, malfunction injury or fire.
- Before mounting/dismounting the module, be sure to shut off all phases of external power supply used by the system.
  Failure to do so may cause module failure or malfunctions.
- Do not install/remove the module to/from the base unit, or the terminal block to/from the module more than 50 times after the first use of the product. (IEC 61131-2 compliant)
  Failure to do so may cause malfunction.
- Do not touch the connector while the power is on.
  Doing so may cause malfunction.
- Before cleaning up and retightening terminal screws and module fixing screws, be sure to shut off all phases of external power supply used by the system.
  Not doing so may cause failure or malfunction of the module.
  If the screws are loose, it may cause the module to fallout, short circuits, or malfunction.
  If the screws are tightened too much, it may cause damages to the screws and/or the module, resulting in the module falling out, short circuits or malfunction.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the module.
  Failure to do so may cause a failure or malfunctions of the module.

[Operation Instructions]

⚠CAUTION

- When performing the control of the programmable controller in operation (especially changing data, program, and operation status (status control)) by connecting a personal computer, etc. to the intelligent function module, read this manual carefully and confirm if the overall safety is maintained.
  Failure to perform correct operations to change data, program, or the status may result in system malfunction, machine damage, or an accident.
- When performing control (in particular, changing data, changing a program or changing the operation status (status control)) of the programmable controller during operation using a BASIC program, do so only after reading the user's manual thoroughly and taking adequate safety precautions.
  If there are errors when changing data, changing a program or in status control, it could result in system malfunction, or cause mechanical damage or accidents.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

REVISIONS

* The handbook number is given on the bottom left of the back cover.

Print Date	* Handbook Number	Revision
Apr., 2005	L(NA)-08050ENG-A	First edition
Oct., 2005	L(NA)-08050ENG-B	Addition Appendix 1 Partial correction Contents, Chapter 1, Section 3.1, Section 3.2.1, Section 3.3, Section 3.4, Section 3.5, Section 3.6.1, Section 3.6.2, Section 4.1, Section 4.2, Appendix 1→Appendix 2
May, 2006	L(NA)-08050ENG-C	Addition Chapter 4 Partial correction Contents, Chapter 1, Section 2.1, Section 2.7, Section 3.1, Chapter 4→Chapter 5, Appendix 1, Appendix 2
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Japanese Handbook Version L-08049-F

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GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this handbook uses the following generic terms and abbreviations.

Generic term/abbreviation	Description
■Series	
A series	Abbreviation for large types of Mitsubishi MELSEC-A series programmable controllers
AnS series	Abbreviation for compact types of Mitsubishi MELSEC-A series programmable controllers
A/AnS series	Generic term for A series and AnS series
QnA series	Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers
QnAS series	Abbreviation for compact types of Mitsubishi MELSEC-QnA series programmable controllers
QnA/QnAS series	Generic term for QnA series and QnAS series
A/AnS/QnA/QnAS series	Generic term for A series, AnS series, QnA series, and QnAS series
Q series	Abbreviation for Mitsubishi MELSEC-Q series programmable controllers
■CPU module type	
CPU module	Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules
Basic model QCPU	Generic term for the Q00JCPU, Q00CPU, and Q01CPU
High Performance model QCPU	Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU * This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q12HCPU.
Process CPU	Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU
Redundant CPU	Generic term for the Q12PRHCPU and Q25PRHCPU
Universal model QCPU	Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU * This handbook mainly explains about the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, and Q06UDHCPU, which can replace the AnS/QnAS series. The specifications and functions of the Q10UDEHCPU to Q100UDEHCPU are the same as those of the modules described above, although the program and memory capacities increase.
■CPU module model	
ACPU	Generic term for MELSEC-A series programmable controller CPUs
AnSCPU	Generic term for MELSEC-AnS series programmable controller CPUs
A/AnSCPU	Generic term for MELSEC-A series and MELSEC-AnS series programmable controller CPUs
AnNCPU	Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21-S1, A2NCPUP21-S3(S4), A3NCPU, A3NCPUP21/R21, and A3NCPUP21-S3
AnACPU	Generic term for the A2ACPU, A2ACPU-S1, A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-S1, and A3ACPUP21/R21
AnUCPU	Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU, A2USCPU-S1, and A2USHCPU-S1
AnN/AnACPU	Generic term for the AnNCPU and AnACPU
AnN/AnA/AnSCPU	Generic term for the AnNCPU, AnACPU, and AnSCPU
QnACPU	Generic term for MELSEC-QnA series programmable controller CPUs
QnASCPU	Generic term for MELSEC-QnAS series programmable controller CPUs
QnA/QnASCPU	Generic term for MELSEC-QnA series and MELSEC-QnAS series programmable controller CPUs
A/AnS/QnA/QnASCPU	Generic term for A series, AnS series, QnA series, and QnAS series programmable controller CPUs
QCPU	Generic term for MELSEC-Q series programmable controller CPUs

1 INTRODUCTION

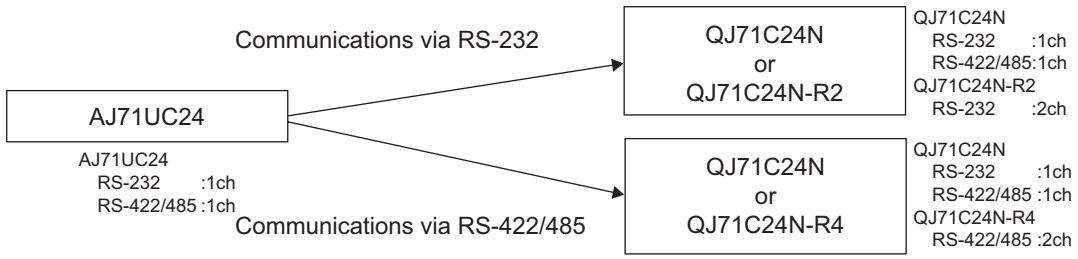
1.1 Replacement of Modules Introduced in This Handbook

This section outlines the replacement of the following communication modules.

- A/AnS series computer link module : Refer to CHAPTER 2.
- QnA/QnAS series serial communication module : Refer to CHAPTER 2.
- A/AnS series Ethernet interface module : Refer to CHAPTER 3.
- QnA/QnAS series Ethernet interface module : Refer to CHAPTER 3.
- A/AnS intelligent communication module : Refer to CHAPTER 4.

(1) Replacement of A/AnS series computer link modules and QnA/QnAS series serial communication modules

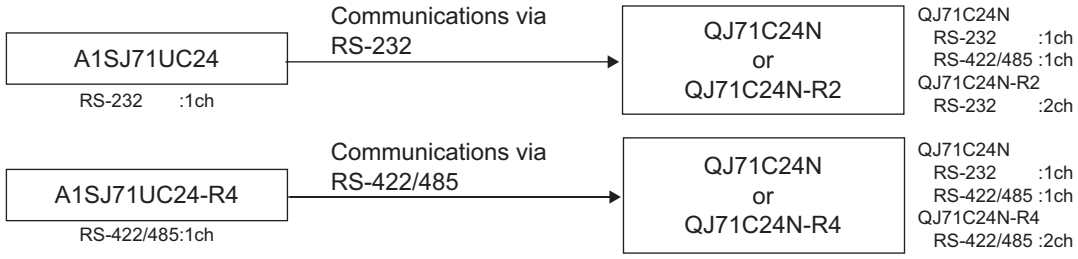
(a) A series computer link module



Point

Q series communication modules do not have a function equivalent to the multidrop link function of the A series communication module AJ71UC24.
Configure other systems such as a CC-Link system.

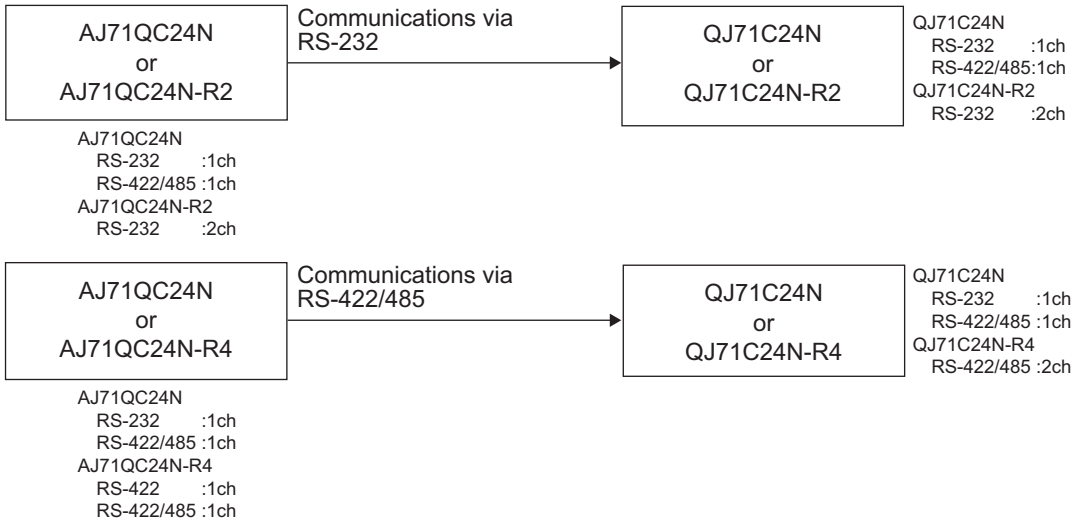
(b) AnS series computer link module



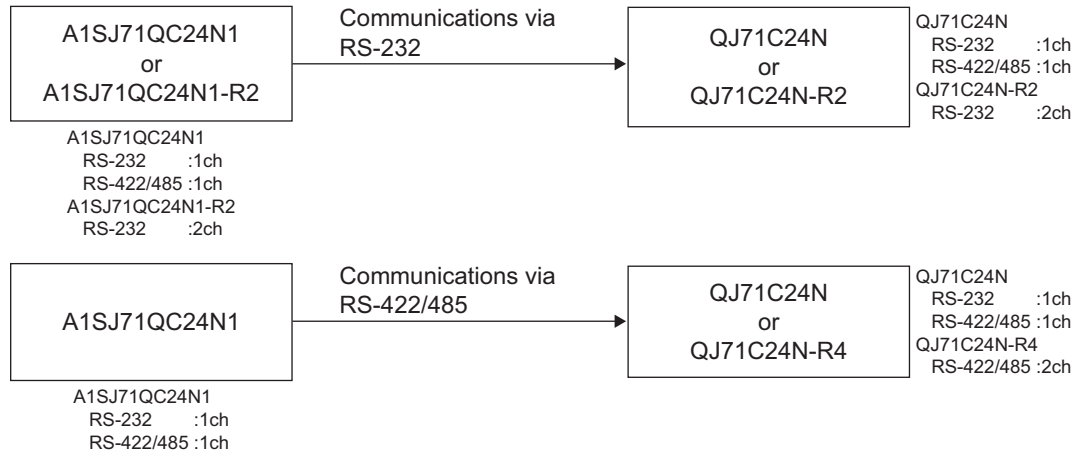
Point

Q series communication modules do not have a function equivalent to the multidrop link function of the AnS series communication module A1SJ71UC24.
Consider other systems such as a CC-Link system.

(c) QnA series serial communication module

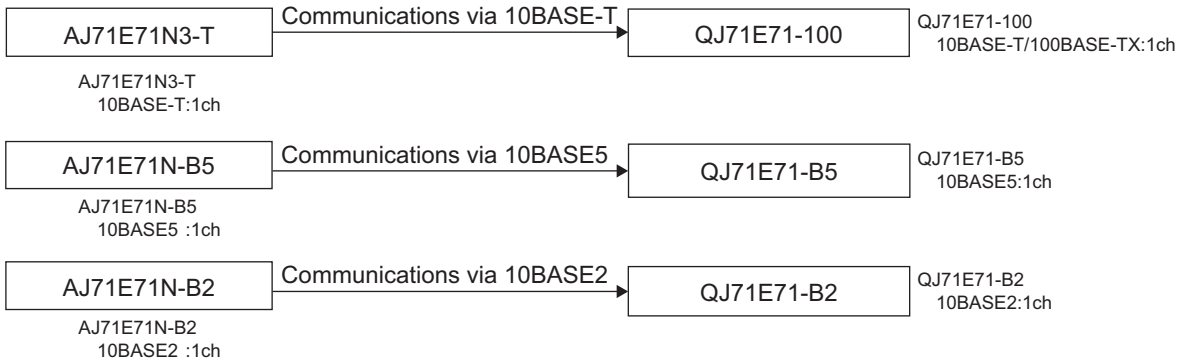


(d) QnAS series serial communication module

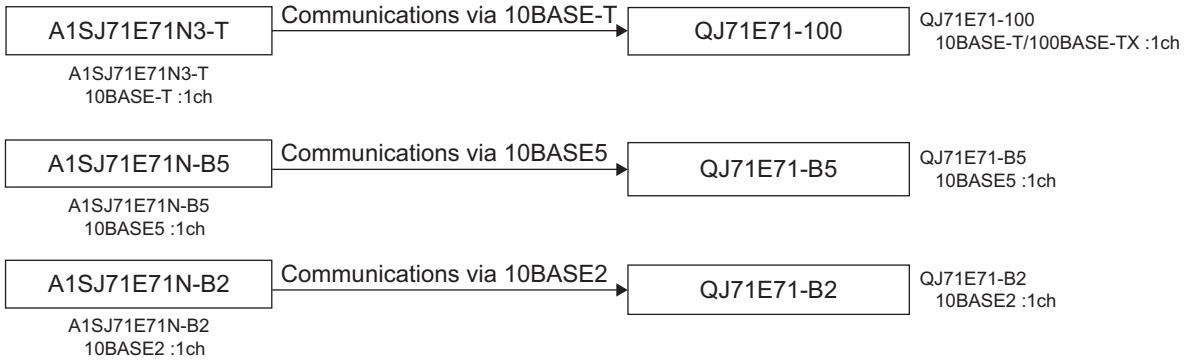


(2) Replacement of A/AnS series Ethernet interface modules and QnA/QnAS series Ethernet interface modules

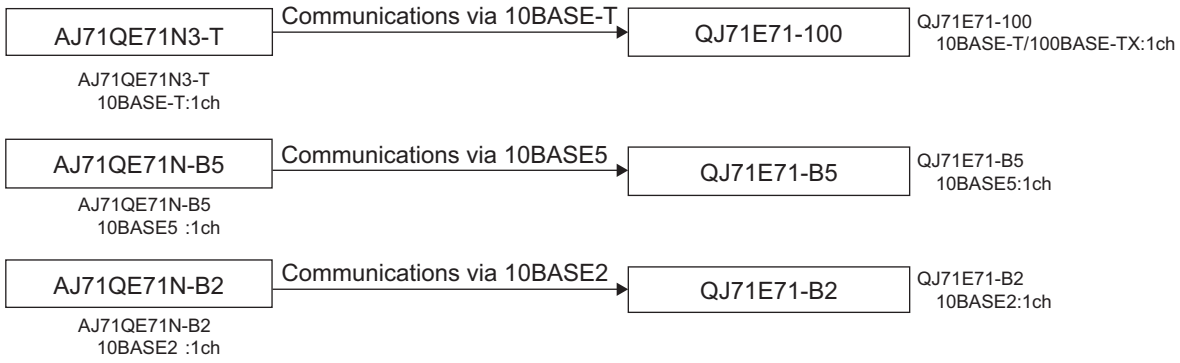
(a) A series Ethernet interface module



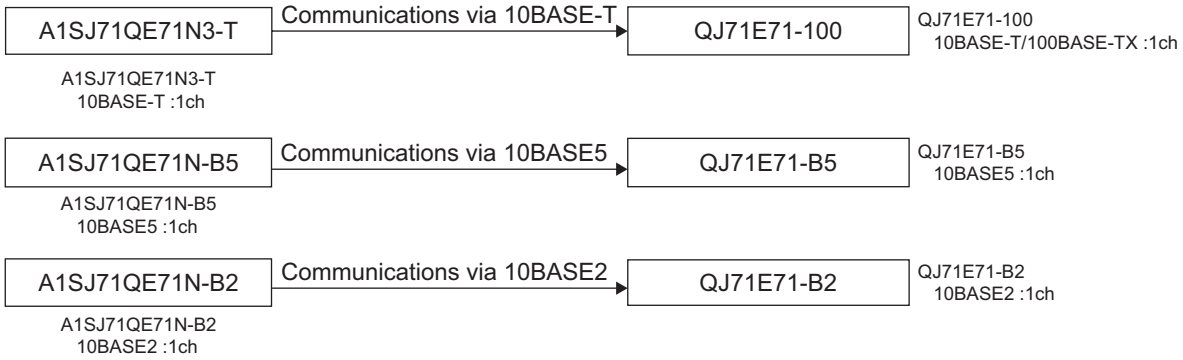
(b) AnS series Ethernet interface module



(c) QnA series Ethernet interface module

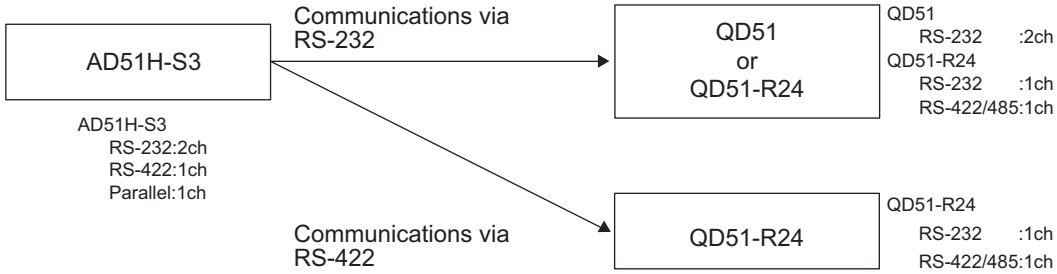


(d) QnAS series Ethernet interface module

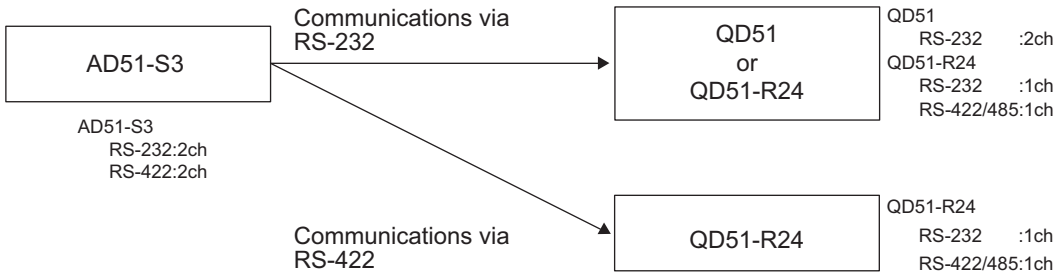


(3) Replacement of intelligent communication modules

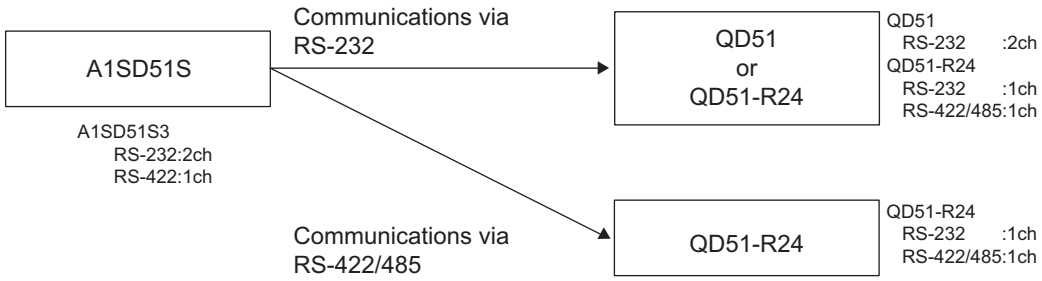
(a) Intelligent communication module AD51H-S3



(b) Intelligent communication module AD51-S3



(c) Intelligent communication module A1SD51S



Point

- Q series intelligent communication modules do not have a parallel interface. Please consider changing the external devices to RS-232/RS-422 interface devices.
- The BASIC program of the AD51-S3 is incompatible with that of the QD51/QD51-R24. Analyze the existing program to create a program with AD51H-BASIC.

1.2 Basic Precautions

(1) When using the sequence program of the A/AnS/QnA/QnAS series on the Q series

The sequence program of the A/AnS/QnA/QnAS series can be converted to be used on the Q series on GX Developer. (On GX Works2, the sequence program of the A/Ans/QnA/QnAS series cannot be converted for the Q series.)
To convert the sequence program of the A/AnS/QnA/QnAS series to be used on the Q series, use GX Developer.

(2) When creating a new sequence program for the Q series

A sequence program can be created for the Q series on GX Developer and GX Works2.

2 SERIAL COMMUNICATION MODULE REPLACEMENT

2.1 List of Serial Communication Modules to be Replaced

(1) Transition of the A series to Q series

Model to be discontinued	Alternative model	Remarks
AJ71UC24	QJ71C24N	RS-232:1ch, RS-422/485:1ch
	QJ71C24N-R2	RS-232:2ch, RS-422/485:none
	QJ71C24N-R4	RS-232:none, RS-422/485:2ch

(2) Transition of the AnS series to Q series

Model to be discontinued	Alternative model	Remarks
A1SJ71UC24-R2	QJ71C24N	RS-232:1ch, RS-422/485:1ch
	QJ71C24N-R2	RS-232:2ch, RS-422/485:none
A1SJ71UC24-R4	QJ71C24N	RS-232:1ch, RS-422/485:1ch
	QJ71C24N-R4	RS-232:none, RS-422/485:2ch

(3) Transition of the QnA series to Q series

Model to be discontinued	Alternative model	Remarks
AJ71QC24N	QJ71C24N	RS-232:1ch, RS-422/485:1ch
AJ71QC24N-R2	QJ71C24N-R2	RS-232:2ch, RS-422/485:none
AJ71QC24N-R4	QJ71C24N-R4	RS-232:none, RS-422/485:2ch

(4) Transition of the QnAS series to Q series

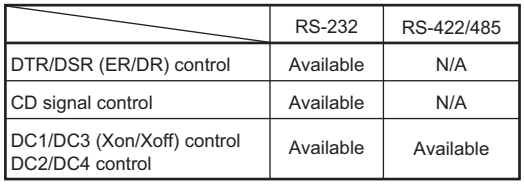
Model to be discontinued	Alternative model	Remarks
A1SJ71QC24N1	QJ71C24N	RS-232:1ch, RS-422/485:1ch
A1SJ71QC24N1-R2	QJ71C24N-R2	RS-232:2ch, RS-422/485:none

2.2 Performance Specifications Comparison

2.2.1 Module performance comparison

(1) Comparison between A series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		A series	Q series		
		AJ71UC24	QJ71C24N*2		
Interface	RS-232	RS-232 compliant (D-Sub 25P)	RS-232 compliant (D-Sub 9P)	△	The connector on the connection cable must be changed.
	RS-422/485	RS-422/485 compliant	RS-422/485 compliant (2-piece terminal block)	△	Wiring must be changed.
Communication method	Communication using dedicated protocol*1	Half-duplex communication		○	
	Non-procedural/ bidirectional communication	Full duplex communication (1:1 connection)/ Half-duplex communication (1:n, m:n connection)		○	
Synchronization method		Start stop synchronization (asynchronous method)		○	
Transmission speed		300 to 19200 bps	50 to 230400 bps	○	
Data format	Start bit	1		○	
	Data bit	7 or 8		○	
	Parity bit	1 (vertical parity)/none		○	
	Stop bit	1 or 2		○	
Access cycle	Communication using dedicated protocol	One request is processed when the mounted station programmable controller CPU executes END processing.		○	
	Non-procedural/ bidirectional communication	Transmission can be executed at each send request, and reception is available at all times.		○	
Error detection	Parity check	Performed (odd/even)/none		○	
	Sum check	Performed (MC protocol/Bidirectional)/none		○	
Transmission control				○	
Line configuration (connection)	RS-232	1:1		○	
	RS-422/485	1 :1, 1 : n, m : n (n:max. 32, m+n:max.32)		○	
Line configuration (data communication)	Communication using dedicated protocol	1:1, 1:n, m:n (n:max.32, m+n:max.32)		○	For details on linked operation between interfaces, refer to the manual.
	Non-procedural communication	1:1, 1:n (n:max.32)	1:1, 1:n, n:1 (n:max.32)	○	
	Bidirectional communication	1:1		○	
Transmission distance	RS-232	Max.15m		○	
	RS-422/485	Max.500m (overall distance)	Max.1200m (overall distance)	○	
No. of E^{2}PROM writes No. of flash ROM writes		Max. 100,000 times on same area in E^{2}PROM	Max. 100,000 times on same area in flash ROM	○	
No. of occupied I/O points		32 points/slot (I/O assignment: special 32 points)	32 points/slot (I/O assignment: intelli. 32 points)	○	

	RS-232	RS-422/485
DTR/DSR (ER/DR) control	Available	N/A
CD signal control	Available	N/A
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	Available	Available

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

*2 When the AJ71UC24 uses only the RS-232 channel, it can be replaced with the QJ71C24N-R2.
When the AJ71UC24 uses only the RS-422 channel, it can be replaced with the QJ71C24N-R4.

(2) Comparison between AnS series and Q series

(a) A1SJ71UC24-R2

○:Compatible, △:Partial change required, ×:Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AnS series	Q series		
		A1SJ71UC24-R2	QJ71C24N QJ71C24N-R2		
Interface	RS-232	RS-232 compliant (D-Sub 9P)		○	QJ71C24N :1ch QJ71C24N-R2 :2ch
	RS-422/485	-	RS-422/485 compliant (2-piece terminal block)	-	QJ71C24N :1ch QJ71C24N-R2 :none
Communication method	Communication using dedicated protocol*1	Half-duplex communication		○	
	Non-procedural/ bidirectional communication	Full duplex communication (1:1 connection)	Full duplex communication (1:1 connection)/ Half-duplex communication (1:n, m:n connection)	○	
Synchronization method		Start stop synchronization (asynchronous method)		○	
Transmission speed		300 to 19200 bps	50 to 230400 bps	○	
Data format	Start bit	1		○	
	Data bit	7 or 8		○	
	Parity bit	1 (vertical parity)/none		○	
	Stop bit	1 or 2		○	
Access cycle	Communication using dedicated protocol	One request is processed when the mounted station programmable controller CPU executes END processing.		○	
	Non-procedural/ bidirectional communication	Transmission can be executed at each send request, and reception is available at all times.		○	
Error detection	Parity check	Performed (odd/even)/none		○	
	Sum check	Performed (MC protocol/Bidirectional)/none		○	
Transmission control		<table><tr><th></th><th>RS-232</th><th>RS-422/485</th></tr><tr><td>DTR/DSR (ER/DR) control</td><td>Available</td><td>N/A</td></tr><tr><td>CD signal control</td><td>Available</td><td>N/A</td></tr><tr><td>DC1/DC3 (Xon/Xoff) control DC2/DC4 control</td><td>Available</td><td>Available</td></tr></table>		○	
Line configuration (connection)	RS-232	1:1		○	
	RS-422/485	-	1 :1, 1 : n, m : n (n:max. 32, m+n:max.32)	○	
Line configuration (data communication)	Communication using dedicated protocol	1:1, 1:n, m:n (n:max.32, m+n:max.32)		○	For details on linked operation between interfaces, refer to the manual.
	Non-procedural communication	1:1, 1:n (n:max.32)	1:1, 1:n, n:1 (n:max.32)	○	
	Bidirectional communication	1:1		○	
Transmission distance	RS-232	Max.15m		○	
	RS-422/485	-	Max.1200m (overall distance)	○	
No. of E^2PROM writes No. of flash ROM writes		Max. 100,000 times on same area in E^2PROM	Max. 100,000 times on same area in flash ROM	○	
No. of occupied I/O points		32 points/slot (I/O assignment: special 32 points)	32 points/slot (I/O assignment: intelli. 32 points)	○	

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

(b) A1SJ71UC24-R4

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>AnS series</th><th>Q series</th></tr>
<tr><th>A1SJ71UC24-R4</th><th>QJ71C24N
QJ71C24N-R4</th></tr>
<tr><td rowspan="2">Interface</td><td>RS-232</td><td>-</td><td>RS-232 compliant
(D-Sub 9P)</td><td>-</td><td>QJ71C24N :1ch
QJ71C24N-R4 :none</td></tr>
<tr><td>RS-422/485</td><td>RS-422/485 compliant</td><td>RS-422/485 compliant
(2-piece terminal block)</td><td>△</td><td>QJ71C24N :1ch
QJ71C24N-R4 :2ch
The wiring must be changed.</td></tr>
<tr><td rowspan="2">Communication method</td><td>Communication using dedicated protocol*1</td><td colspan="2">Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td>Non-procedural/ bidirectional communication</td><td colspan="2">Full duplex communication (1:1 connection)/
Half-duplex communication (1:n, m:n connection)</td><td>○</td><td></td></tr>
<tr><td colspan="2">Synchronization method</td><td colspan="2">Start stop synchronization (asynchronous method)</td><td>○</td><td></td></tr>
<tr><td colspan="2">Transmission speed</td><td>300 to 19200 bps</td><td>50 to 230400 bps</td><td>○</td><td></td></tr>
<tr><td rowspan="4">Data format</td><td>Start bit</td><td colspan="2">1</td><td>○</td><td></td></tr>
<tr><td>Data bit</td><td colspan="2">7 or 8</td><td>○</td><td></td></tr>
<tr><td>Parity bit</td><td colspan="2">1 (vertical parity)/none</td><td>○</td><td></td></tr>
<tr><td>Stop bit</td><td colspan="2">1 or 2</td><td>○</td><td></td></tr>
<tr><td rowspan="2">Access cycle</td><td>Communication using dedicated protocol</td><td colspan="2">One request is processed when the mounted station programmable controller CPU executes END processing.</td><td>○</td><td></td></tr>
<tr><td>Non-procedural/ bidirectional communication</td><td colspan="2">Transmission can be executed at each send request, and reception is available at all times.</td><td>○</td><td></td></tr>
<tr><td rowspan="2">Error detection</td><td>Parity check</td><td colspan="2">Performed (odd/even)/none</td><td>○</td><td></td></tr>
<tr><td>Sum check</td><td colspan="2">Performed (MC protocol/Bidirectional)/none</td><td>○</td><td></td></tr>
<tr><td colspan="2">Transmission control</td><td colspan="2"><table><tr><th></th><th>RS-232</th><th>RS-422/485</th></tr><tr><td>DTR/DSR (ER/DR) control</td><td>Available</td><td>N/A</td></tr><tr><td>CD signal control</td><td>Available</td><td>N/A</td></tr><tr><td>DC1/DC3 (Xon/Xoff) control
DC2/DC4 control</td><td>Available</td><td>Available</td></tr></table></td><td>○</td><td></td></tr>
<tr><td rowspan="2">Line configuration (connection)</td><td>RS-232</td><td>-</td><td>1:1</td><td>○</td><td></td></tr>
<tr><td>RS-422/485</td><td colspan="2">1 :1, 1 : n, m : n
(n:max. 32, m+n:max.32)</td><td>○</td><td></td></tr>
<tr><td rowspan="3">Line configuration (data communication)</td><td>Communication using dedicated protocol</td><td colspan="2">1:1, 1:n, m:n
(n:max.32, m+n:max.32)</td><td>○</td><td rowspan="3">For details on linked operation between interfaces, refer to the manual.</td></tr>
<tr><td>Non-procedural communication</td><td>1:1, 1:n (n:max.32)</td><td>1:1, 1:n, n:1 (n:max.32)</td><td>○</td></tr>
<tr><td>Bidirectional communication</td><td colspan="2">1:1</td><td>○</td></tr>
<tr><td rowspan="2">Transmission distance</td><td>RS-232</td><td>-</td><td>Max.15m</td><td>○</td><td></td></tr>
<tr><td>RS-422/485</td><td>Max.500m
(overall distance)</td><td>Max.1200m
(overall distance)</td><td>○</td><td></td></tr>
<tr><td colspan="2">No. of E^{2}PROM writes
No. of flash ROM writes</td><td>Max. 100,000 times on same area in E^{2}PROM</td><td>Max. 100,000 times on same area in flash ROM</td><td>○</td><td></td></tr>
<tr><td colspan="2">No. of occupied I/O points</td><td>32 points/slot
(I/O assignment: special 32 points)</td><td>32 points/slot
(I/O assignment: intelli. 32 points)</td><td>○</td><td></td></tr>
</table>

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

(3) Comparison between QnA series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>QnA series</th><th>Q series</th></tr>
<tr><th>AJ71QC24N
AJ71QC24N-R2
AJ71QC24N-R4</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="6">Interface</td><td>RS-232</td><td>RS-232 compliant
(D-Sub 25P)</td><td>RS-232 compliant
(D-Sub 9P)</td><td>△</td><td>The connector on the connection cable must be changed.</td></tr>
<tr><td>RS-422</td><td>RS-422 compliant
(D-Sub 25P)</td><td>RS-422/485 compliant
(2-piece plug-in connector socket block)</td><td>△</td><td rowspan="2">Wiring must be changed.</td></tr>
<tr><td>RS-422/485</td><td>RS-422/485 compliant
(2-piece terminal block)</td><td>RS-422/485 compliant
(2-piece terminal block)
(2-piece plug-in connector socket block)</td><td>△</td></tr>
<tr><td>Communication using dedicated protocol*1</td><td colspan="2">Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td>Non-procedural protocol communication</td><td colspan="2">Full duplex communication/Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td>Bidirectional protocol communication</td><td colspan="2">Full duplex communication/Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td colspan="2">Synchronization method</td><td colspan="2">Start stop synchronization (asynchronous method)</td><td>○</td><td></td></tr>
<tr><td colspan="2">Transmission speed</td><td>300 to 230400 bps</td><td>50 to 230400 bps</td><td>○</td><td></td></tr>
<tr><td rowspan="4">Data format</td><td>Start bit</td><td colspan="2">1</td><td>○</td><td></td></tr>
<tr><td>Data bit</td><td colspan="2">7 or 8</td><td>○</td><td></td></tr>
<tr><td>Parity bit</td><td colspan="2">1 (vertical parity)/none</td><td>○</td><td></td></tr>
<tr><td>Stop bit</td><td colspan="2">1 or 2</td><td>○</td><td></td></tr>
<tr><td rowspan="3">Access cycle</td><td>Communication using dedicated protocol</td><td colspan="2">Processing when the mounted station programmable controller CPU performs END processing</td><td>○</td><td></td></tr>
<tr><td>Non-procedural protocol communication</td><td colspan="2" rowspan="2">Transmission can be executed at each send request, and reception is available at all times.</td><td>○</td><td></td></tr>
<tr><td>Bidirectional protocol communication</td><td>○</td><td></td></tr>
<tr><td rowspan="2">Error detection</td><td>Parity check</td><td colspan="2">Performed (odd/even)/none</td><td>○</td><td></td></tr>
<tr><td>Sum check</td><td colspan="2">Performed/none</td><td>○</td><td>Select at parameter/user frame.</td></tr>
<tr><td colspan="2">Transmission control</td><td colspan="2"><table><tr><th></th><th>RS-232</th><th>RS-422</th><th>RS-422/485</th></tr><tr><td>DTR/DSR (ER/DR) control</td><td>Available</td><td>Available</td><td>N/A</td></tr><tr><td>RS/CS control</td><td>Available</td><td>N/A</td><td>N/A</td></tr><tr><td>CD signal control</td><td>Available</td><td>N/A</td><td>N/A</td></tr><tr><td>DC1/DC3 (Xon/Xoff) control
DC2/DC4 control</td><td>Available</td><td>Available</td><td>Available</td></tr></table></td><td>△</td><td>The Q series does not have the RS-422 interface.
Transmission control must be changed to the transmission control of the interface to be used.</td></tr>
<tr><td rowspan="3">Line configuration (connection)</td><td>RS-232</td><td colspan="2">1:1</td><td rowspan="3">△</td><td rowspan="3">The Q series does not have the RS-422 interface.
The interface to be used must be changed.</td></tr>
<tr><td>RS-422</td><td>1:1</td><td>-</td></tr>
<tr><td>RS-422/485</td><td>1:1, 1:n, m:n
(n:max.32, m+n:max.32)</td><td>1:1, 1:n, n:1, m:n
(n:max.32, m+n:max.32)</td></tr>
</table>

(Continued on next page)

○:Compatible, △:Partial change required, ×:Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		QnA series	Q series		
		AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	QJ71C24N QJ71C24N-R2 QJ71C24N-R4		
line configuration (data communication)	Communication using dedicated protocol	1:1, 1:n, m:n (n:max.32, m+n:max.32)		○	For details on linked operation between interfaces, refer to the manual.
	Non-procedural protocol communication	1:1, 1:n (n:max.32)	1:1, 1:n, n:1 (n:max.32)		
	Bidirectional protocol communication	1:1			
Transmission distance	RS-232	Max.15m		○	The Q series does not have the RS-422 interface. The interface to be used must be changed.
	RS-422	Max.1200m	-	△	
	RS-422/485	Max.1200m (overall distance)		○	
No. of E^2PROM writes No. of flash ROM writes		Max. 100,000 times on same area in E^2PROM	Max. 100,000 times on same area in flash ROM	○	
No. of occupied I/O points		32 points/slot (I/O assignment: special 32 points)	32 points/slot (I/O assignment: intelli. 32 points)	○	

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

(4) Comparison between QnAS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>QnAS series</th><th>Q series</th></tr>
<tr><th>A1SJ71QC24N1
AJ71QC24N1-R2</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="5">Interface</td><td>RS-232</td><td colspan="2">RS-232 compliant (D-Sub 9P)</td><td>○</td><td>QJ71C24N : 1ch
QJ71C24N-R2: 2ch
QJ71C24N-R4: none</td></tr>
<tr><td>RS-422/485</td><td>RS-422/485 compliant
(2-piece terminal block)</td><td>RS-422/485 compliant
(2-piece terminal block)
(2-piece plug-in connector socket block)</td><td>△</td><td>QJ71C24N : 1ch
QJ71C24N-R2: none
QJ71C24N-R4: 2ch
Wiring must be changed.</td></tr>
<tr><td>Communication using dedicated protocol*1</td><td colspan="2">Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td>Non-procedural protocol communication</td><td colspan="2">Full duplex communication/Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td>Bidirectional protocol communication</td><td colspan="2">Full duplex communication/Half-duplex communication</td><td>○</td><td></td></tr>
<tr><td colspan="2">Synchronization method</td><td colspan="2">Start stop synchronization (asynchronous method)</td><td>○</td><td></td></tr>
<tr><td colspan="2">Transmission speed</td><td>300 to 115200 bps</td><td>50 to 230400 bps</td><td>○</td><td></td></tr>
<tr><td rowspan="4">Data format</td><td>Start bit</td><td colspan="2">1</td><td>○</td><td></td></tr>
<tr><td>Data bit</td><td colspan="2">7 or 8</td><td>○</td><td></td></tr>
<tr><td>Parity bit</td><td colspan="2">1 (vertical parity)/none</td><td>○</td><td></td></tr>
<tr><td>Stop bit</td><td colspan="2">1 or 2</td><td>○</td><td></td></tr>
<tr><td rowspan="3">Access cycle</td><td>Communication using dedicated protocol</td><td colspan="2">Processing when the mounted station programmable controller CPU performs END processing</td><td>○</td><td></td></tr>
<tr><td>Non-procedural protocol communication</td><td colspan="2" rowspan="2">Transmission can be executed at each send request, and reception is available at all times.</td><td>○</td><td></td></tr>
<tr><td>Bidirectional protocol communication</td><td>○</td><td></td></tr>
<tr><td rowspan="2">Error detection</td><td>Parity check</td><td colspan="2">Performed (odd/even)/none</td><td>○</td><td></td></tr>
<tr><td>Sum check</td><td colspan="2">Performed/none</td><td>○</td><td>Select at parameter/user frame.</td></tr>
<tr><td colspan="2">Transmission control</td><td colspan="2"><table><tr><th></th><th>RS-232</th><th>RS-422/485</th></tr><tr><td>DTR/DSR (ER/DR) control</td><td>Available</td><td>N/A</td></tr><tr><td>RS/CS control</td><td>Available</td><td>N/A</td></tr><tr><td>CD signal control</td><td>Available</td><td>N/A</td></tr><tr><td>DC1/DC3 (Xon/Xoff) control
DC2/DC4 control</td><td>Available</td><td>Available</td></tr></table></td><td>○</td><td></td></tr>
<tr><td rowspan="2">Line configuration (connection)</td><td>RS-232</td><td colspan="2">1:1</td><td rowspan="2">○</td><td rowspan="2"></td></tr>
<tr><td>RS-422/485</td><td>1:1, 1:n, m:n
(n:max.32, m+n:max.32)</td><td>1:1, 1:n, n:1, m:n
(n:max.32, m+n:max.32)</td></tr>
</table>

(Continued on next page)

○:Compatible, △:Partial change required, ×:Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	QJ71C24N QJ71C24N-R2 QJ71C24N-R4		
line configuration (data communication)	Communication using dedicated protocol	1:1, 1:n, m:n (n:max.32, m+n:max.32)		○	For details on linked operation between interfaces, refer to the manual.
	Non-procedural protocol communication	1:1, 1:n (n:max.32)	1:1, 1:n, n:1 (n:max.32)		
	Bidirectional protocol communication	1:1			
Transmission distance	RS-232	Max.15m		○	
	RS-422/485	Max.1200m (overall distance)			
No. of E^2PROM writes No. of flash ROM writes		Max. 100,000 times on same area in E^2PROM	Max. 100,000 times on same area in flash ROM	○	
No. of occupied I/O points		32 points/slot (I/O assignment: special 32 points)	32 points/slot (I/O assignment: intelli. 32 points)	○	

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

2.2.2 Cable specifications comparison

(1) Comparison between A series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>A series</th><th>Q series</th></tr>
<tr><th>AJ71UC24</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="4">RS-232</td><td>Cable</td><td colspan="2">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (side of connection cable for connecting to the module)</td><td>D-Sub 25P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>△</td><td>The connector must be changed.</td></tr>
<tr><td rowspan="4">RS-422/485</td><td>Cable</td><td colspan="2"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3P</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or less</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td>Max.500m
(overall distance)</td><td>Max.1200m
(overall distance)</td><td>○</td><td></td></tr>
<tr><td>External wiring (side of connection cable for connecting to the module)</td><td colspan="2">Connected to terminal block</td><td>○</td><td>For details on the connection method, refer to the manual.</td></tr>
</table>

*1 The RS-232 and RS-422/485 recommended cables are listed in the Q series serial communication module manual.

*2 Use the exclusive products listed in the Q series serial communication module manual as the connector shell of the cable to connect to the Q series serial communication module.

(2) Comparison between AnS series and Q series

○:Compatible, ○:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>AnS series</th><th>Q series</th></tr>
<tr><th>A1SJ71UC24-R2
A1SJ71UC24-R4</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="3">RS-232</td><td>Cable</td><td colspan="2">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (side of connection cable for connecting to the module)</td><td>D-Sub 9P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>○</td><td></td></tr>
<tr><td rowspan="4">RS-422/485</td><td>Cable</td><td colspan="2"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3P</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or less</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td>Max.500m
(overall distance)</td><td>Max.1200m
(overall distance)</td><td>○</td><td></td></tr>
<tr><td>External wiring (side of connection cable for connecting to the module)</td><td colspan="2">Connected to terminal block</td><td>○</td><td>For details on the connection method, refer to the manual.</td></tr>
</table>

*1 The RS-232 and RS-422/485 recommended cables are listed in the Q series serial communication module manual.

*2 Use the exclusive products listed in the Q series serial communication module manual as the connector shell of the cable to connect to the Q series serial communication module.

(3) Comparison between QnA series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>QnA series</th><th>Q series</th></tr>
<tr><th>AJ71QC24N
AJ71QC24N-R2
AJ71QC24N-R4</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="3">RS-232</td><td>Cable</td><td colspan="2">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (side of connection cable for connecting to the module)</td><td>D-Sub 25P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>△</td><td>The connector must be changed.</td></tr>
<tr><td rowspan="2">RS-422</td><td>Cable</td><td>(Same as RS-422/485)</td><td>-</td><td>△</td><td rowspan="2">The Q series does not have the RS-422 interface.
The interface to be used must be changed.</td></tr>
<tr><td>Applicable connector for external wiring (side of connection cable for connecting to the module)</td><td>D-Sub 25P
(male, screw type)</td><td>Connected to the RS-232 or RS-422/485 interface.</td><td>△</td></tr>
<tr><td rowspan="4">RS-422/485</td><td>Cable</td><td colspan="2"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3P</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or less</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.1200m (overall distance)</td><td>○</td><td></td></tr>
<tr><td>External wiring (side of connection cable for connecting to the module)</td><td colspan="2">Connected to terminal block</td><td>○</td><td>For details on the connection method, refer to the manual.</td></tr>
</table>

*1 The RS-232 and RS-422/485 recommended cables are listed in the Q series serial communication module manual.

*2 Use the exclusive products listed in the Q series serial communication module manual as the connector shell of the cable to connect to the Q series serial communication module.

(4) Comparison between QnAS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="2" rowspan="3">Item</th><th colspan="2">Specifications</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th></tr>
<tr><th>QnAS series</th><th>Q series</th></tr>
<tr><th>A1SJ71QC24N1
A1SJ71QC24N1-R2</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td rowspan="3">RS-232</td><td>Cable</td><td colspan="2">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (side of connection cable for connecting to the module)</td><td>D-Sub 9P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>○</td><td></td></tr>
<tr><td rowspan="4">RS-422/485</td><td>Cable</td><td colspan="2"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3P</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or less</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max.1200m (overall distance)</td><td>○</td><td></td></tr>
<tr><td>External wiring (side of connection cable for connecting to the module)</td><td colspan="2">Connected to terminal block</td><td>○</td><td>For details on the connection method, refer to the manual.</td></tr>
</table>

*1 The RS-232 and RS-422/485 recommended cables are listed in the Q series serial communication module manual.

*2 Use the exclusive products listed in the Q series serial communication module manual as the connector shell of the cable to connect to the Q series serial communication module.

2.3 Function Comparison

(1) Comparison between A/AnS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

Item		Description			Compat-ibility	Precautions for replacement	Reference section
		A series	AnS series	Q series			
		AJ71UC24	A1SJ71UC24-R2 A1SJ71UC24-R4	QJ71C24N QJ71C24N-R2 QJ71C24N-R4			
Communication using dedicated protocol*1	Device memory read/write	Programmable controller CPU data is read/written to and from external devices.			△	The available commands, accessible device range, and access to another station are restricted. The program on the external device side must be changed.	Section 2.6.1
	On-demand	Data is transmitted to external devices from the programmable controller CPU.			△	Change to a sequence program that uses the dedicated instruction (ONDEMAND).	
Non-procedural communication	Data transmission Programmable controller → External device	Data is transmitted to external devices from the programmable controller CPU.			△	Change to a sequence program that uses the dedicated instructions (OUTPUT/INPUT).	
	Data reception Programmable controller ← External device	Data is transmitted from external devices.			△		
Bidirectional communication	Data transmission Programmable controller → External device	Data is transmitted to external devices from the programmable controller CPU.			△	Change to a sequence program that uses the dedicated instructions (BIDOUT/BIDIN).	
	Data reception Programmable controller ← External device	Data is transmitted from external devices.			△		
Transmission using printer function		Transmits messages (character strings) to the printer from the programmable controller CPU.			△	Change to a sequence program that uses the dedicated instruction (PRR). Transmitted by nonprocedural protocol using user frames.	
Transmission control	DTR/DSR control	Data transmission/reception with external devices is controlled by RS-232 control signals.			○		
	CD signal control				○		
	DC code control	DC codes (including Xon/Xoff) are sent/received to control data transmission/reception with external devices.			○		

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

(2) Comparison between QnA/QnAS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

Item		Description			Compat-ibility	Precautions for replacement	Reference section
		QnA series	QnAS series	Q series			
		AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4			
Communication using dedicated protocol*1	Communications in ASCII mode	Communications in dedicated protocol is performed using ASCII data.			○		
	Communications in binary mode	Communications in dedicated protocol is performed using binary data.			○		
	Device memory read/write	Programmable controller CPU data is read/written to and from external devices.			○		
	Access to another station	Data is read/written to another station's programmable controller CPU on the network system.			○	The program on the PC side sometimes must be changed according to the network to pass through.	
	On-demand	Data is transmitted to external devices from the programmable controller CPU.			○		
Non-procedural protocol communication	Data transmission/ reception Programmable controller←→ External device	Data is transmitted/received between the programmable controller CPU and external devices.			○		
	Data transmission/ reception in user frames	Data is transmitted or received using the data (user frames) registered to the serial communication module.			○		
	Data transmission/ reception by ASCII binary conversion	Binary data is converted to ASCII data before it is transmitted. Received ASCII data is converted to binary data.			○		
Bidirectional protocol communication	Data transmission/ reception Programmable controller←→ External device	Data is transmitted/received between the programmable controller CPU and external devices.			○		
	Data transmission/ reception by ASCII binary conversion	Binary data is converted to ASCII data before it is transmitted. Received ASCII data is converted to binary data.			○		
Communication by dedicated link instruction (SEND/RECV, READ/WRITE, REQ)		Data is transmitted/received with another station's programmable controller CPU on a multidrop connection by link instructions.		-	×	Study the method for communicating via MELSECNET/H.	Section 2.6.2
Transmission control	DTR/DSR control	Data transmission/reception with external devices is controlled by RS-232 control signals.			○		
	RS/CS control				○		
	CD signal control				○		
	DC code control	DC codes (including Xon/Xoff) are sent/received to control data transmission/reception with external devices.			○		

*1 On the Q series, this is called "MELSEC communication protocol" (abbrev. "MC protocol").

2.4 Switch Setting Comparison

(1) Comparison between A series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

<table>
<tr><th colspan="3" rowspan="3">Switch name</th><th colspan="3">Description</th><th rowspan="3">Compat-ibility</th><th rowspan="3">Precautions for replacement</th><th rowspan="3">Reference section</th></tr>
<tr><th colspan="2">A series</th><th>Q series</th></tr>
<tr><th colspan="2">AJ71UC24</th><th>QJ71C24N
QJ71C24N-R2
QJ71C24N-R4</th></tr>
<tr><td colspan="3" rowspan="11">Mode switch</td><td colspan="3">Each of the interface modes' setting is determined by the data communication function to be used.</td><td rowspan="11">-</td><td rowspan="11">△</td><td rowspan="12">Set the switch settings in the GX Developer PLC parameter settings.
Refer to Section 2.4 (3)*1.</td><td rowspan="13">Section 2.7</td></tr>
<tr><td></td><td>RS-232</td><td>RS-422/485</td></tr>
<tr><td>0</td><td colspan="2">Use not allowed</td></tr>
<tr><td>1 to 4</td><td>Dedicated protocol (format1 to 4)</td><td>Non-procedural mode or bidirectional mode</td></tr>
<tr><td>5 to 8</td><td>Non-procedural mode or bidirectional mode</td><td>Dedicated protocol (format1 to 4)</td></tr>
<tr><td>9</td><td colspan="2">Non-procedural mode</td></tr>
<tr><td>A to D</td><td colspan="2">Dedicated protocol (format1 to 4)</td></tr>
<tr><td>E</td><td colspan="2">Use not allowed</td></tr>
<tr><td>F</td><td colspan="2">Self-loopback test</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="3">Station number switch</td><td colspan="3">The station number of the module for when date communications is performed using dedicated protocol is set.</td><td>-</td><td>△</td></tr>
<tr><td rowspan="10">Transmission specification switch</td><td>SW11</td><td>Main channel setting</td><td colspan="3">The target interface of transmission processing and reception processing is set.</td><td>-</td><td>-</td><td>There is no distinction with the main channel on the Q series.</td></tr>
<tr><td>SW12</td><td>Data bit setting</td><td colspan="3">The data bit length of the data to be transmitted/received is set.</td><td>-</td><td>△</td><td rowspan="8">Set the switch settings in the GX Developer PLC parameter settings.
Refer to Section 2.4 (3)*1.</td></tr>
<tr><td>SW13 to SW15</td><td>Transmission speed setting</td><td colspan="3">The transmission speed for when data is to be transmitted/received is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW16</td><td>Parity bit enable/disable setting</td><td colspan="3">The parity bit ON/OFF of the data to be sent/received is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW17</td><td>Even/odd parity setting</td><td colspan="3">The type of parity bit to add to the data to be transmitted/received is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW18</td><td>Stop bit setting</td><td colspan="3">The stop bit length of the data to be transmitted/received is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW21</td><td>Sum check enable/disable setting</td><td colspan="3">The sum check code presence in dedicated protocol data communications is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW22</td><td>Write during RUN enable/ disable setting</td><td colspan="3">Write during RUN enable/disable in dedicated protocol data communications is set.</td><td>-</td><td>△</td></tr>
<tr><td>SW23</td><td>computer link/ multidrop link selection</td><td colspan="3">The function of computer link module to be used is set.</td><td>-</td><td>-</td><td rowspan="2">There is no multidrop link function provided for the Q series.</td><td></td></tr>
<tr><td>SW24</td><td>master/local station setting</td><td colspan="3">The station type for use of multidrop link function is set.</td><td>-</td><td>-</td><td></td></tr>
</table>

(2) Comparison between AnS series and Q series

(a) A1SJ71UC24-R2

○:Compatible, △:Partial change required, ×:Incompatible

Switch name			Description		Compat-ibility	Precautions for replacement	Reference section
			AnS series	Q series			
			A1SJ71UC24-R2	QJ71C24N QJ71C24N-R2			
Mode switch			Each of the interface modes' setting is determined by the data communication function to be used. RS-232 (CH1) 0: Use not allowed 1 to 4: Dedicated protocol (format1 to 4) 5: Non-procedural mode or bidirectional mode 6 to E: Use not allowed F: Self-loopback test	-	△	Set the switch settings in the GX Developer PLC parameter settings. Refer to Section 2.4 (3)*1.	Section 2.7
Station number switch			The station number of the module for when date communications is performed using dedicated protocol is set.	-	△		
Transmission specification switch	SW03	A1ADP-SP setting		-	-		
	SW04	Write during RUN enable/ disable setting	Write during RUN enable/disable in dedicated protocol data communications is set.	-	△		
	SW05 to SW07	Transmission speed setting	The transmission speed for when data is to be transmitted/received is set.	-	△		
	SW08	Data bit setting	The data bit length of the data to be transmitted/received is set.	-	△		
	SW09	Parity bit enable/disable setting	The parity bit ON/OFF of the data to be sent/received is set.	-	△		
	SW10	Even/odd parity setting	The type of parity bit to add to the data to be transmitted/received is set.	-	△		
	SW11	Stop bit setting	The stop bit length of the data to be transmitted/received is set.	-	△		
	SW12	Sum check enable/disable setting	The sum check code presence in dedicated protocol data communications is set.	-	△		

*1 Using the A1SJ71UC24-R2 with the A1ADP-SP

When the A1SJ71UC24-R2 with the software version X or later is used, the A1ADP-SP setting can be used.

This setting is used to create a sequence program in the nonprocedural mode by using dedicated instructions for the computer link function in the AnACPU.

When using dedicated instructions for the computer link function, switch the A1ADP-SP setting to ON. When not using them, switch the setting to OFF.

When the A1SJ71UC24-R2 with the software version W or earlier is used, the dedicated instructions for the computer link function cannot be used.

Create a sequence program using the FROM/TO instructions.

(b) A1SJ71UC24-R4

○:Compatible, △:Partial change required, ×:Incompatible

Switch name			Description		Compatibility	Precautions for replacement	Reference section
			AnS series	Q series			
			A1SJ71UC24-R4	QJ71C24N QJ71C24N-R4			
Mode switch			Each of the interface modes' setting is determined by the data communication function to be used. RS-422/485 (CH2) 0 to 3: Use not allowed 4: Non-procedural mode or bidirectional mode 5 to 8: Dedicated protocol (format1 to 4) 9 to E: Use not allowed F: Self-loopback test	-	△	Set the switch settings in the GX Developer PLC parameter settings. Refer to Section 2.4 (3)*1.	Section 2.7
Station number switch			The station number of the module for when date communications is performed using dedicated protocol is set.	-	△		
Transmission specification switch	SW01	master/local station setting	The station type for use of multidrop link function is set.	-	-	There is no multidrop link function provided for the Q series.	
	SW02	computer link/ multidrop link selection	The function of computer link module to be used is set.	-	-		
	SW03	A1ADP-SP setting		-	-	Set the switch settings in the GX Developer PLC parameter settings. Refer to Section 2.4 (3)*1.	
	SW04	Write during RUN enable/ disable setting	Write during RUN enable/disable in dedicated protocol data communications is set.	-	△		
	SW05 to SW07	Transmission speed setting	The transmission speed for when data is to be transmitted/received is set.	-	△		
	SW08	Data bit setting	The data bit length of the data to be transmitted/received is set.	-	△		
	SW09	Parity bit enable/disable setting	The parity bit ON/OFF of the data to be sent/received is set.	-	△		
	SW10	Even/odd parity setting	The type of parity bit to add to the data to be transmitted/received is set.	-	△		
	SW11	Stop bit setting	The stop bit length of the data to be transmitted/received is set.	-	△		
	SW12	Sum check enable/disable setting	The sum check code presence in dedicated protocol data communications is set.	-	△		

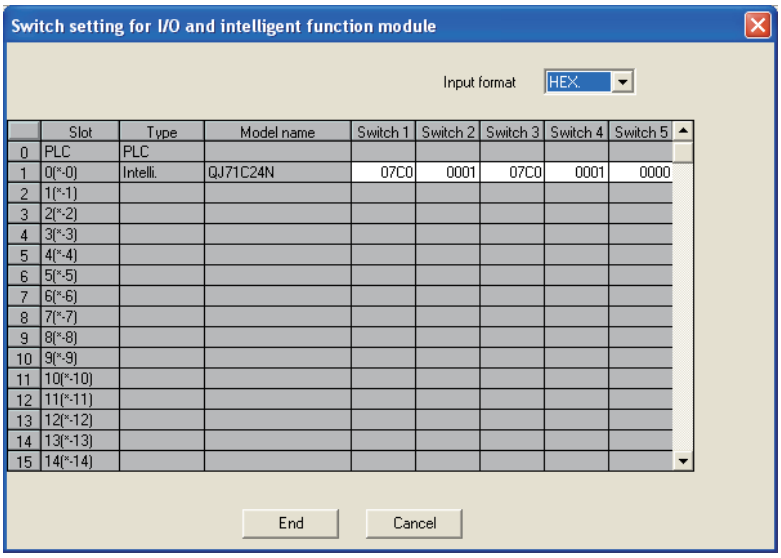
*1 When the A1SJ71UC24-R4 is mounted to the A1ADP-SP
When the A1SJ71UC24-R4 with the software version X or later, the A1ADP-SP setting can be used.
This setting is used to create a sequence program in the non-procedural mode by using the dedicated instructions for the computer link function in the AnACPU.
When using the dedicated instructions for the computer link module, switch the A1ADP-SP setting to ON. When not using them, switch the setting to OFF.
When the A1SJ71UC24-R4 with the software version W or earlier is used, the dedicated instructions for the computer link function cannot be used.
Create a sequence program using the FROM/TO instructions.

(3) Comparison between QnA/QnAS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

Switch name			Description			Compat-ibility	Precautions for replacement	Reference section
			QnA series	QnAS series	Q series			
			AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4			
Mode switch			Each of the interface modes' setting is determined by the data communication function to be used. 0: (For independent operation/linked operation) 1: Dedicated protocol (format 1) 2: Dedicated protocol (format 2) 3: Dedicated protocol (format 3) 4: Dedicated protocol (format 4) 5: Dedicated protocol (format 5) 6: Nonprocedural protocol 7: Bidirectional protocol 8 to D: Setting unavailable E: ROM/RAM/switch test F: Self-loopback test	-	△	Set the switch settings in the GX Developer PLC parameter settings.*1	Section 2.7
Station number switch			The station number of the module for when data communications is performed using dedicated protocol is set.	-	△		
Transmission specification switch	SW01	Operation setting	Operation (independent operation/linked operation) of the two interfaces is set.	-	△		
	SW02	Data bit setting	The data bit length of the data to be transmitted/received is set.	-	△		
	SW03	Parity bit enable/disable setting	The parity bit ON/OFF of the data to be sent/received is set.	-	△		
	SW04	Even/odd parity setting	The type of parity bit to add to the data to be transmitted/received is set.	-	△		
	SW05	Stop bit setting	The stop bit length of the data to be transmitted/received is set.	-	△		
	SW06	Sum check enable/disable setting	The sum check code ON/OFF in dedicated protocol/bidirectional protocol data communications is set.	-	△		
	SW07	Write during RUN enable/ disable setting	Write during RUN enable/disable in dedicated protocol data communications is set.	-	△		
	SW08	Setting change enable/disable setting	Mode switching and E^2PROM write enabled/disabled are set.	-	△		
	SW09 to SW12	Transmission speed setting	The transmission speed for when data is to be transmitted/received is set.	-	△		
	SW13 to SW15	-	(All switches are set to OFF.)	-	-		

*1 The Q series serial communication module switch setting is set in the GX Developer PLC parameter settings.



2.5 Program Comparison

2.5.1 I/O signal

(1) Comparison between A/AnS series and Q series

There is no compatibility in the I/O signal assignments between the A/AnS series and the Q series. Make a new sequence program.

○:Compatible, △:Partial change required, ×:Incompatible

Input signal	Signal name		Compatibility	Precautions for replacement
	A series	AnS series		
	AJ71UC24	A1SJ71UC24-R2 A1SJ71UC24-R4		
Xn0	Transmission complete		△	On the Q series, Xn0, Xn1, Xn7, and Xn8 are used as the transmission complete signals.
Xn1	Receive data read request		△	On the Q series, Xn3, Xn4, XnA, and XnB are used as the read request, receive data, and read request signals.
Xn2	Global signal		△	On the Q series, X(n+1)A and X(n+1)B are used as global signals.
Xn3	On-demand in execution		△	Transmission complete of on-demand data is confirmed by the complete device of the ONDEMAND instruction.
Xn4 Xn5 Xn6	Computer link module Transmission sequence status		△	The status is confirmed by the transmission sequence state storage area (addresses: 597(256_H), 613(265_H)) in buffer memory.
Xn7	Computer link module ready		△	On the Q series, X(n+1)E is used as the ready signal.
Xn8	Use prohibited		△	On the Q series, Xn8 is used as the abnormal completion of transmission signal.
Xn9	Mode switching complete		△	On the Q series, Xn6 is used as the mode switching complete signal.
XnA XnB	Use prohibited		△	On the Q series, XnA and XnB are used as signals for various applications. (Refer to Section 2.5.1 (2).)
XnC	Use prohibited		○	
XnD	Watchdog timer		△	On the Q series, X(n+1)F is used as the watchdog timer signal.
XnE to X(n+1)F	Use prohibited		△	On the Q series, XnE to X(n+1)F are used as signals for various applications. (Refer to Section 2.5.1 (2).)

Output signal	Signal name		Compatibility	Precautions for replacement
	A series	AnS series		
	AJ71UC24	A1SJ71UC24-R2 A1SJ71UC24-R4		
Yn0 to YnF	Use prohibited		△	On the Q series, Yn0 to YnF are used as signals for various applications. (Refer to Section 2.5.1 (2).)
Y(n+1)0	Send request		△	On the Q series, Yn0 and Yn7 are used as the send request signals.
Y(n+1)1	Receive data read complete		△	On the Q series, Yn1 and Yn8 are used as the receive data read complete signals.
Y(n+1)2 to Y(n+1)8	Use prohibited		△	On the Q series, Y(n+1)2 to Y(n+1)8 are used as signals for various applications. (Refer to Section 2.5.1 (2).)
Y(n+1)9	Mode switching request		△	On the Q series, Yn2 and Yn9 are used as the mode switching request signals.
Y(n+1)A Y(n+1)B	Use prohibited		○	
Y(n+1)C	Use prohibited		△	On the Q series, Y(n+1)C is used as the system setting default request signal.
Y(n+1)D Y(n+1)E Y(n+1)F	Use prohibited		○	

(2) Comparison between QnA/QnAS series and Q series

○:Compatible, △:Partial change required, ×:Incompatible

Input signal	Signal name						Compat-ibility	Precautions for replacement
	QnA series		QnAS series	Q series				
	AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4		A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4				
Xn0	CH1	Normal completion of transmission		CH1	Normal completion of transmission		○	
Xn1		Abnormal completion of transmission			Abnormal completion of transmission		○	
Xn2		Transmission processing in progress			Transmission processing in progress		○	
Xn3		Receive data read request			Receive data read request		○	
Xn4		Receive error detection			Receive error detection		○	
Xn5	(System use)			(System use)			○	
Xn6	CH1 mode switching			CH1 mode switching			○	
Xn7	CH2	Normal completion of transmission		CH2	Normal completion of transmission		○	
Xn8		Abnormal completion of transmission			Abnormal completion of transmission		○	
Xn9		Transmission processing in progress			Transmission processing in progress		○	
XnA		Receive data read request			Receive data read request		○	
XnB		Receive error detection			Receive error detection		○	
XnC	(System use)			(System use)			○	
XnD	CH2 mode switching			CH2 mode switching			○	
XnE	CH1 ERR.LED ON			CH1 error.			○	
XnF	CH2 ERR.LED ON			CH2 error.			○	
X(n+1)0	Modem initialization completion			Modem initialization completion			○	
X(n+1)1	Dialing			Dialing			○	
X(n+1)2	Connecting			Line connection			○	
X(n+1)3	Abnormal completion of initialization/connection			Initialization, line connection failure			○	
X(n+1)4	Modem disconnection completion			Line disconnection completion			○	
X(n+1)5	Normal completion of notification			Normal completion of notification			○	
X(n+1)6	Abnormal completion of notification			Abnormal completion of notification			○	
X(n+1)7	E^2PROM read complete			Flash ROM read complete			○	
X(n+1)8	E^2PROM write complete			Flash ROM write complete			○	
X(n+1)9	E^2PROM system setting write complete			Flash ROM system setting completion			○	
X(n+1)A	CH1 global signal			CH1 global signal			○	
X(n+1)B	CH2 global signal			CH2 global signal			○	
X(n+1)C	System setting default completion			System setting default completion			○	
X(n+1)D	(System use)			(System use)			○	
X(n+1)E	QC24N ready signal (accessible)			C24 ready signal			○	
X(n+1)F	Watchdog timer			Watchdog timer			○	

○:Compatible, △:Partial change required, ×:Incompatible

Output signal	Signal name				Compat-ibility	Precautions for replacement
	QnA series		QnAS series	Q series		
	AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4		A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4		
Yn0	CH1	Send request		CH1 Send request	○	
Yn1		Receive data read complete		CH1 Receive data read complete	○	
Yn2		Mode switching request		CH1 Mode switching request	○	
Yn3	Use prohibited			Use prohibited	○	
Yn4						
Yn5						
Yn6						
Yn7	CH2	Send request		CH2 Send request	○	
Yn8		Receive data read complete		CH2 Receive data read complete	○	
Yn9		Mode switching request		CH2 Mode switching request	○	
YnA	Use prohibited			Use prohibited	○	
YnB						
YnC						
YnD						
YnE	CH1 ERR.LED OFF request			CH1 side error information initialization request	○	
YnF	CH2 ERR.LED OFF request			CH2 side error information initialization request	○	
Y(n+1)0	Modem initialization request			Modem initialization request	○	
Y(n+1)1	Connection request			Line connection request	○	
Y(n+1)2	Modem disconnection request			Line disconnection request	○	
Y(n+1)3	Use prohibited			Use prohibited	○	
Y(n+1)4	Notification issue request			Notification issue request	○	
Y(n+1)5	Use prohibited			Use prohibited	○	
Y(n+1)6						
Y(n+1)7	E^2PROM read request			Flash ROM read request	○	
Y(n+1)8	E^2PROM write request			Flash ROM write request	○	
Y(n+1)9	E^2PROM system setting write request			Flash ROM system setting request	○	
Y(n+1)A	Use prohibited			Use prohibited	○	
Y(n+1)B						
Y(n+1)C	System setting default request			System setting default request	○	
Y(n+1)D	Use prohibited			Use prohibited	○	
Y(n+1)E						
Y(n+1)F						

2.5.2 Buffer memory

(1) Comparison between A/AnS series and Q series

There is no compatibility in the buffer memory assignments between the A/AnS series and the Q series. Make a new sequence program.
The table below shows the main assignment areas for the initial settings and for transmission/reception.

○:Compatible, △:Partial change required, ×:Incompatible

Buffer memory address		Buffer memory name		Compat-ibility	Precautions for replacement
HEX	DEC	A series	AnS series		
		AJ71UC24	A1SJ71UC24-R2 A1SJ71UC24-R4		
0_H	0	Non-procedural send data count storage area		△	On the Q series, the area of address 400_H, 800_H (1024, 2048) is used as the send data count specification area.
1_H to $7F_H$	1 to 127	Send data storage area		△	On the Q series, the area from address 401_H, 801_H (1025, 2049) is used as the send data specification area.
80_H	128	Non-procedural receive data count storage area		△	On the Q series, the area of address 600_H, $A00_H$ (1536, 2560) is used as the receive data count specification area.
81_H to FF_H	129 to 255	Receive data storage area		△	On the Q series, the area from address 601_H, $A01_H$ (1537, 2561) is used as the receive data storage area.
100_H	256	Non-procedural receive end code specification		△	On the Q series, the area of address $A5_H$, 145_H (165, 325) is used as the receive end code specification area.
to	to	to		△	On the Q series, the area from address 101_H (257) onward is used for various applications.
103_H	259	Non-procedural word/byte specification area		△	On the Q series, the area of 96_H, 136_H (150, 310) is used as the word/byte unit specification area.*1
104_H	260	Non-procedural send buffer memory head address specification area		△	On the Q series, the area of address $A2_H$, 142_H (162, 322) is used as the send buffer memory head address specification area.*1
105_H	261	Non-procedural send buffer memory length specification area		△	On the Q series, the area of address $A3_H$, 143_H (163, 323) is used as the send buffer memory length specification area.*1
106_H	262	Non-procedural receive buffer memory head address specification area		△	On the Q series, the area of address $A6_H$, 146_H (166, 326) is used as the receive buffer memory head address specification area.*1
107_H	263	Non-procedural receive buffer memory length specification area		△	On the Q series, the area of address $A7_H$, 147_H (167, 327) is used as the receive buffer memory buffer memory length specification area.*1
108_H	264	Non-procedural receive end data count specification area		△	On the Q series, the area of address $A4_H$, 144_H (164, 324) is used as the receive end data count specification area.*1
109_H	265	On-demand buffer memory head address specification area		△	On the Q series, the area of address $A0_H$, 140_H (160, 320) is used as the on-demand buffer memory head address specification area.*1
$10A_H$	266	On-demand length specification area		△	On the Q series, the area of address $A1_H$, 141_H (161, 321) is used as the on-demand data length specification area.*1
$10B_H$	267	RS-232 CD terminal check setting area		△	On the Q series, the area of 97_H, 137_H (151, 311) is used as the CD terminal check specification area.*1
$10C_H$ to DFF_H	268 to 3583	-		△	On the Q series, the area from address $10C_H$ (152) onward is used for various applications.

*1 Make the initial setting on the utility package (GX Configurator-SC).

(2) Comparison between QnA/QnAS series and Q series

The table below shows the main assignment areas for the initial settings and for transmission/reception.

○:Compatible, △:Partial change required, ×:Incompatible

Buffer memory address		Buffer memory name			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
HEX	DEC	AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4		
0_H	0	System setting area		LED, communication error clear area	-	
		CH1 LED OFF, communication error clear request area		CH1 LED OFF, communication error clear request area	○	
to	to	to		to	○	
$2E_H$ to 38_H	46 to 56	Modem Function area (For initial setting)		Modem function specification-1 area (For initial setting)	○	
39_H to $8F_H$	57 to 143	System area (use prohibited)		System area (use prohibited)	○	
90_H, 130_H	144, 304	Mode switching area		Mode switching specification area	○	
91_H, 131_H	145, 305					
92_H, 132_H	146, 306	System area (use prohibited)		RS•DTR signal status spefication area	△	Use the default value.
93_H, 133_H	147, 307	DTR/DSR, DC control specification area		DTR/DSR, DC control specification area	○	
94_H, 134_H	148, 308	DC1/DC3 code specification area		DC1/DC3 code specification area	○	
95_H, 135_H	149, 309	DC2/DC4 code specification area		DC2/DC4 code specification area	○	
96_H, 136_H	150, 310	Word/byte specification area		Word/byte specification area	○	
97_H, 137_H	151, 311	RS-232 CD terminal check setting area		RS-232 CD terminal check setting area	○	
to	to	to		to	○	
$A0_H$, 140_H	160, 320	On-demand buffer memory head address specification area		On-demand buffer memory head address specification area	○	
$A1_H$, 141_H	161, 321	On-demand data length specification area		On-demand data length specification area	○	
$A2_H$, 142_H	162, 322	Send buffer memory head address specification area		Send buffer memory head address specification area	○	
$A3_H$, 143_H	163, 323	Send buffer memory length specification area		Send buffer memory length specification area	○	
$A4_H$, 144_H	164, 324	Receive end data count specification area		Receive end data count specification area	○	
$A5_H$, 145_H	165, 325	Receive end code specification area		Receive end code specification area	○	
$A6_H$, 146_H	166, 326	receive buffer memory head address specification area		receive buffer memory head address specification area	○	
$A7_H$, 147_H	167, 327	receive buffer memory length specification area		receive buffer memory length specification area	○	
to	to	to		to	○	
200_H to 220_H	512 to 544	System information area		System information area	○	
221_H to $23D_H$	545 to 573	Modem function area		Modem function area	○	
$23E_H$	574	System information area		System area (use prohibited)	-	
$23F_H$ to $24E_H$	575 to 590	System area (use prohibited)			○	
$24F_H$	591			station No. setting check area	○	
to	to	to		to	○	
$3FF_H$	1023	System area (use prohibited)		System area (use prohibited)	○	
400_H	1024	CH1 transfer buffer memory		CH1 transfer buffer memory	-	
		Send data count specification area		Send data count specification area	○	
401_H to $5FF_H$	1025 to 1535	Send data specification area		Send data specification area	○	
600_H	1536	Receive data count specification area		Receive data count specification area	○	
601_H to $7FF_H$	1537 to 2047	Receive data storage area		Receive data storage area	○	

(Continued on next page)

○:Compatible, △:Partial change required, ×:Incompatible

Buffer memory address		Buffer memory name			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
HEX	DEC	AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	A1SJ71QC24N1 A1SJ71QC24N1-R2	QJ71C24N QJ71C24N-R2 QJ71C24N-R4		
800_H	2048	CH2 transfer buffer memory		CH2 transfer buffer memory	-	
		Send data count specification area		Send data count specification area	○	
801_H to $9FF_H$	2049 to 2559	Send data specification area		Send data specification area	○	
$A00_H$	2560	Receive data count specification area		Receive data count specification area	○	
$A01_H$ to BFF_H	2561 to 3071	Receive data storage area		Receive data storage area	○	
$C00_H$ to $1AFF_H$	3072 to 6911	User free area		User free area	○	
$1B00_H$ to $1FF6_H$	6912 to 8182	User frame registration area		User registration area	○	
$1FF7_H$ to $1FFF_H$	8183 to 8191	System area (use prohibited)		System area (use prohibited)	○	
2000_H	8192	-		Flash ROM write enable/disable specification area	△	An additional sequence program is required depending on the functions to be used.
2001_H to $7FFF_H$	8193 to 32767			(Area for new function)		

2.6 Reuse of Existing Programs

2.6.1 Reuse of A/AnS series programs

Data communications between programmable controller CPU and external device, and between programmable controller CPUs that was performed by the A/AnS series computer link module can also be performed using Q series serial communication modules.

The following shows a description of how to reuse programs for A/AnS series computer link module for use on a Q series serial communication module at replacement of modules.

Item	Relevant device	Description	Remarks
Initial setting	Programmable controller CPU	[Initial Setting on the Utility Package] Make the initial setting on the utility package (GX Configurator-SC). [Deleting the initial setting program] Delete the initial setting program. [Setting the sum check code of the bidirectional protocol] When appending messages with the sum check code in bidirectional protocol communications, set the switches in the GX Developer PLC parameters.	Refer to the Q Corresponding Serial Communication Module User's Manual (Basic).
Communication using dedicated protocol (MC protocol communication)	Programmable controller CPU	[Access to another station] When accessing other station's programmable controller CPU via MELSECNET/H, set "Valid module during other station access" in the GX Developer network parameters. [Data transmission by the on-demand function] Change to a sequence program that uses the dedicated instruction (ONDEMAND).	• Refer to the GX Developer Operating Manual. • Refer to the Q Corresponding Serial Communication Module User's Manual (Basic). • Refer to the MELSEC communication protocol reference manual.
	Communication target device	[Accessing the programmable controller CPU] The available commands, accessible device range, and access to another station are restricted.*1 *2 [Access to another station] Another station cannot be accessed via the data link system (MELSECNET(II), MELSECNET/B).	
Non-procedural communication (Non-procedural protocol communication)	Programmable controller CPU	[Transmission/reception of data] Change to a sequence program that uses the dedicated instructions (INPUT, OUTPUT).	Refer to the Q Corresponding Serial Communication Module User's Manual (Basic).
	Communication target device	[Transmission of data] When receiving by the receive end code on the programmable controller CPU side, transmit the data (default, CR+LF (codes: $0D_H$, $0A_H$)) of the end code at the end of the data to be transmitted to the programmable controller CPU.*3	
Bidirectional communication (Bidirectional protocol communication)	Programmable controller CPU	[Transmission/reception of data] Change to a sequence program that uses the dedicated instructions (BIDIN, BIDOUT).	
Transmission using printer function	Programmable controller CPU	[Printing messages on a printer] When messages*4 were being printed on a printer, create a transmission program using user frames of the Q series serial communication module.*5 Delete programs that use the regular printer function.	Refer to the Q Corresponding Serial Communication Module User's Manual (Application).
Others	Programmable controller CPU	[Assignment of I/O signals] There is no compatibility in the I/O signal (X/Y) assignments between the A/AnS series and the Q series. Check the I/O signals (X/Y) in use, and correct the program.	Refer to the Q Corresponding Serial Communication Module User's Manual (Basic).
	Programmable controller CPU and Communication target device	[Assignment of buffer memory] There is no compatibility in the buffer memory assignments between the A/AnS series and the Q series. Check the target buffer memories and addresses of the data to read/write, and correct the program.	

*1 Only accessing of device memory on the programmable controller CPU is available.
Accessible device range is the same as that on the A/AnS series programmable controller CPU.
The following devices cannot be accessed from external devices:
- Devices newly added on by QCPU
- Latch relays (L) and step relays (S)
  *In the case of QCPU, latch relays (L) and step relays (S) are different devices from internal relays (M). Internal relays, however, are accessed whichever of these relays is specified.
- File registers (R)

To use a function other than accessing of device memories, access using the new commands for the Q series serial communication module.
(Create a new program.)

*2 The following devices in special relays (M9000 onwards) and special registers (D9000 onwards) are accessed:
- SD1000 to SD1255 are accessed by specifying D9000 to D9255.
- SM1000 to SM1255 are accessed by specifying M9000 to M9255.

*3 In the same way as when an A/AnS series computer link module is used, any receive end code can be registered to a Q series serial communication module, and data can be transmitted to external devices as a result of this.

*4 Messages that are handled by an A/AnS series computer link module become user frames on a Q series serial communication module.

*5 Messages (user frames) can be registered on the utility package (GX Configurator-SC).
Messages are transmitted by the dedicated instruction (PRR).

2.6.2 Reuse of QnA/QnAS series programs

Data communications between programmable controller CPU and external device, and between programmable controller CPUs that was performed by the QnA/QnAS series serial communication module can also be performed using Q series serial communication modules.

The following shows a description of how reuse programs for a QnA/QnAS series serial communication module for use on a Q series serial communication module at replacement of module.

Item	Relevant device	Description	Remarks
Communication using link instruction	Programmable controller CPU	[Data communications by link instructions] Link instructions are not provided with a function for performing data communications with another stations programmable controller CPU on a multidrop connection. The communications method must be changed (e.g. communications via MELSECNET/H). Delete the data communications program using the link instruction.	
Others	Communication target device	[Data communications on the RS-422/485 interface] The precautions during data communications are the same as when a QnA/QnAS series serial communication module is used. First check operation of the RS-422/485 interface on the programmable controller CPU side, and then insert a wait time, etc. to adjust the data transmission/reception timing.	Refer to the Q Corresponding Serial Communication Module User's Manual (Basic).

2.7 Other Precaution

The following shows the precautions relating to Q series serial communication modules when A/AnS/QnA/QnAS series programmable controllers are replaced with Q series programmable controllers.

(1) About processing time

The processing time for data communications differs between the A/AnS/QnAQnAS and Q series modules.
For this reason, some data communications timing may be also different. If necessary, adjust the timing by inserting a wait time, for example.
For actual details on processing times, refer to the manual for the respective module.

(2) About switch settings

When using a Q series serial communication module, be sure to set the operation mode, station number and transmission specifications in the following parameter setting screen on GX Developer.

• "Switch setting for intelligent function module" screen

The Q series serial communication module does not have setting switches for setting the mode setting, station number setting and transmission specifications setting.

(3) About the RS-422 interface

Q series communication modules do not have the connector specifications RS-422 interface (CH1) that is available on the QnA series communication module AJ71QC24N-R4.
Use the RS-232 interface or terminal block specifications RS-422/485 interface to connect to external devices.

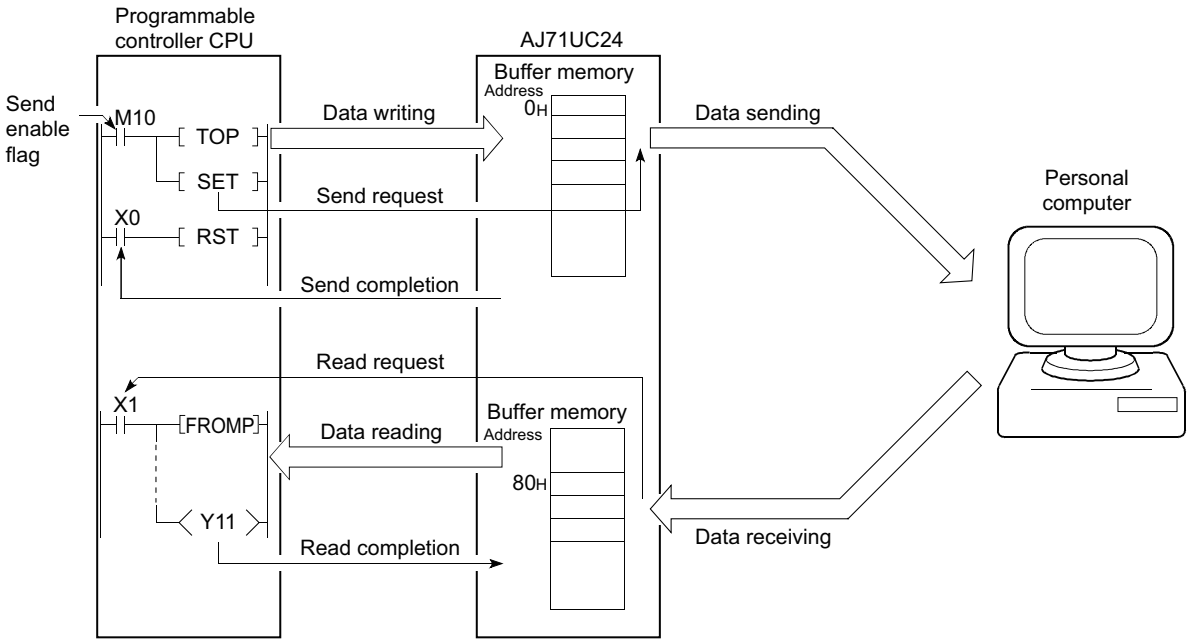
(4) About data communications on the RS-422/485 interface

The precautions during data communications on the RS-422/485 interface are the same as when a QnA/QnAS series serial communication module is used. When external devices may receive the wrong data, attach a pullup/pulldown transistor on the external device side.

2.8 Program Examples

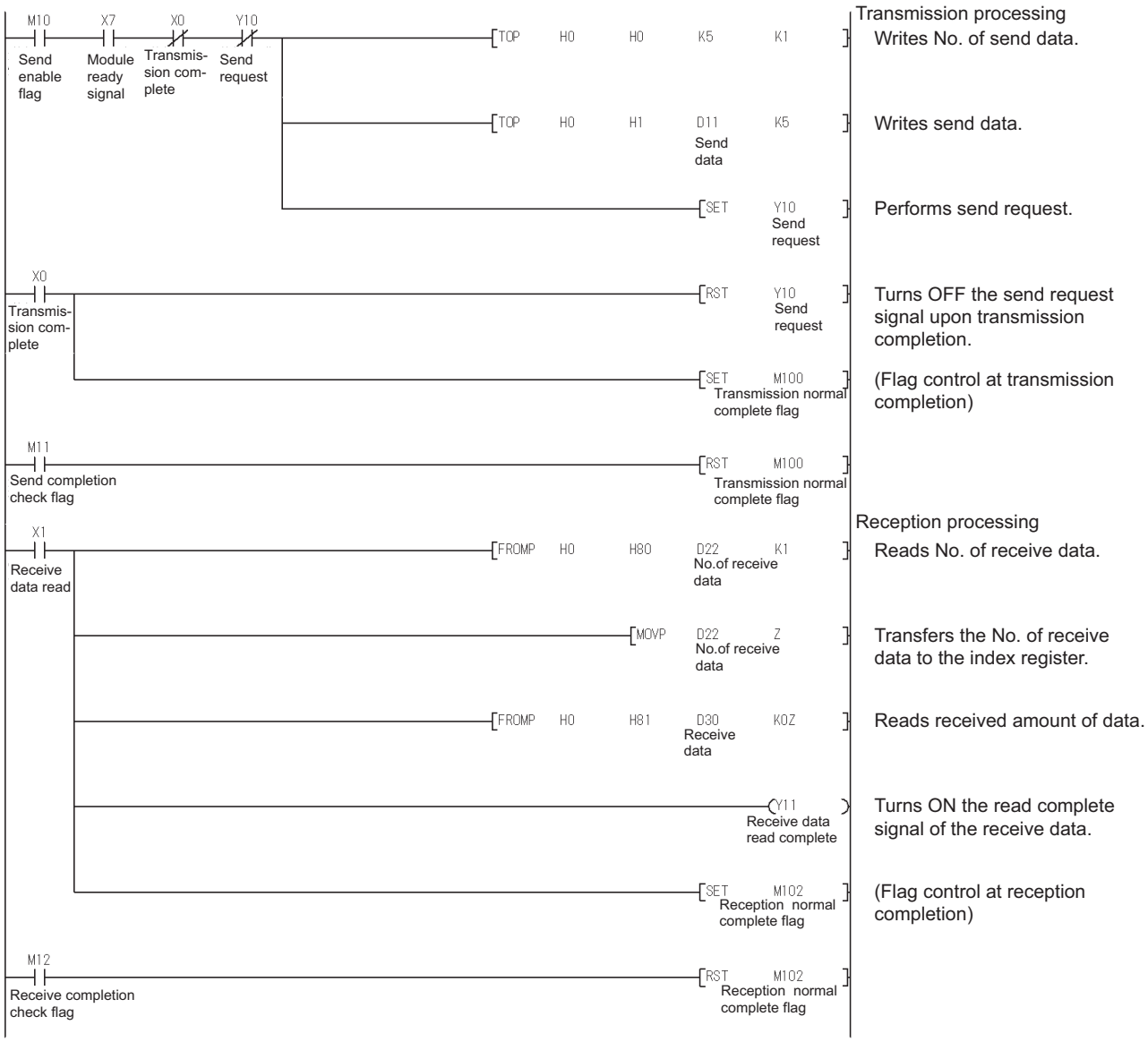
The following shows an example of how to change the nonprocedural communications program on the A/AnS series computer link module for use on a Q series serial communication module when replacing an A/AnS series programmable controller with a Q series programmable controller.
When applying the program examples introduced in this section to an actual program, sufficiently study if there will be any problem in control on the target system.

(1) Program example of A/AnS series computer link module

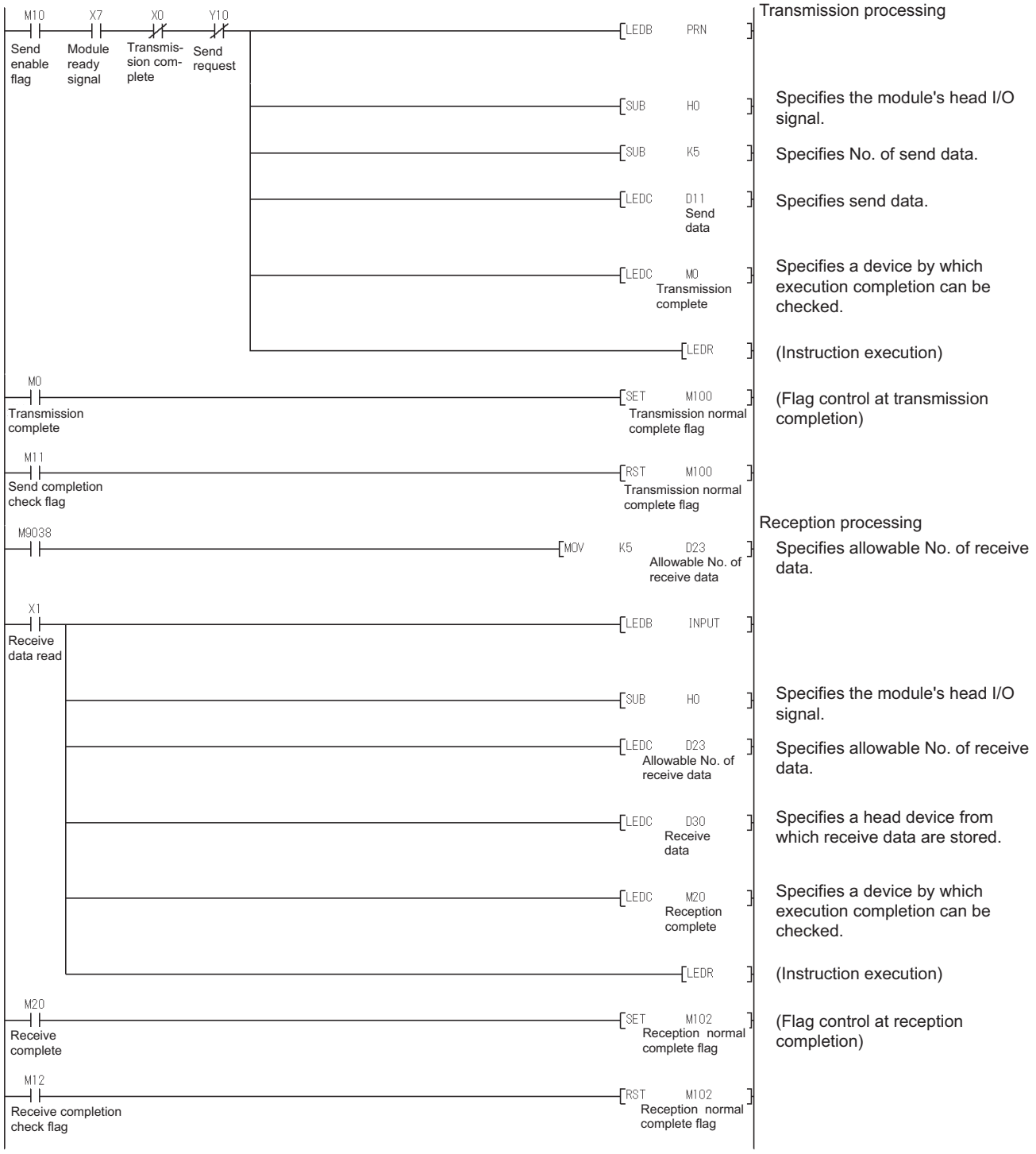


(When using FROM/TO instruction)

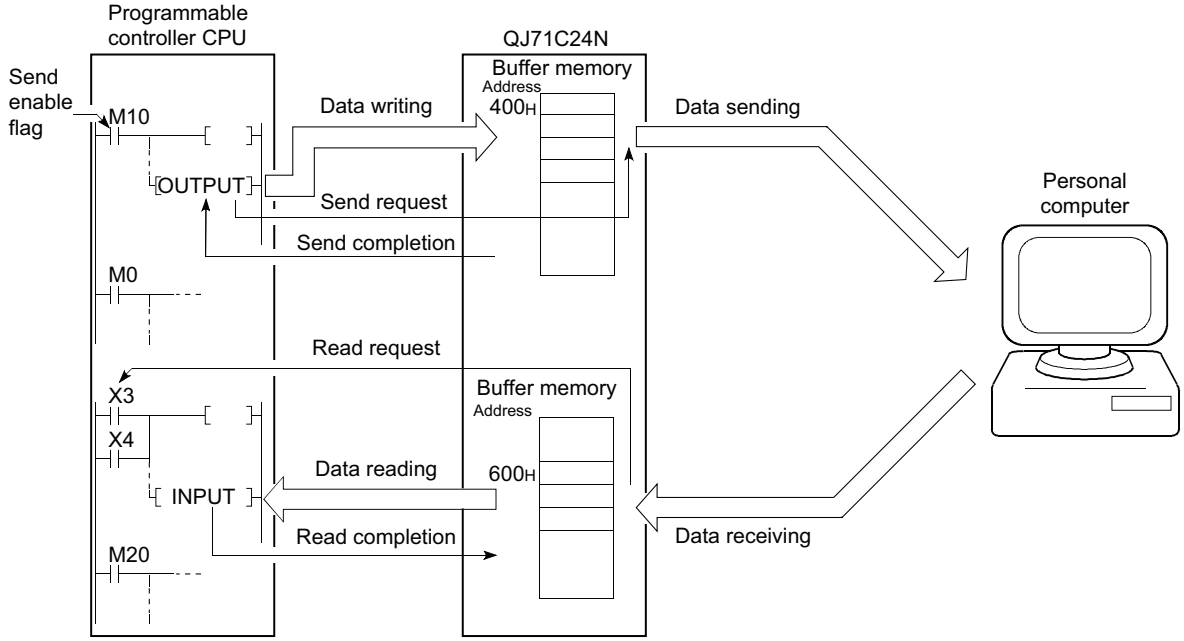
(a) When using application instruction (FROM/TO)

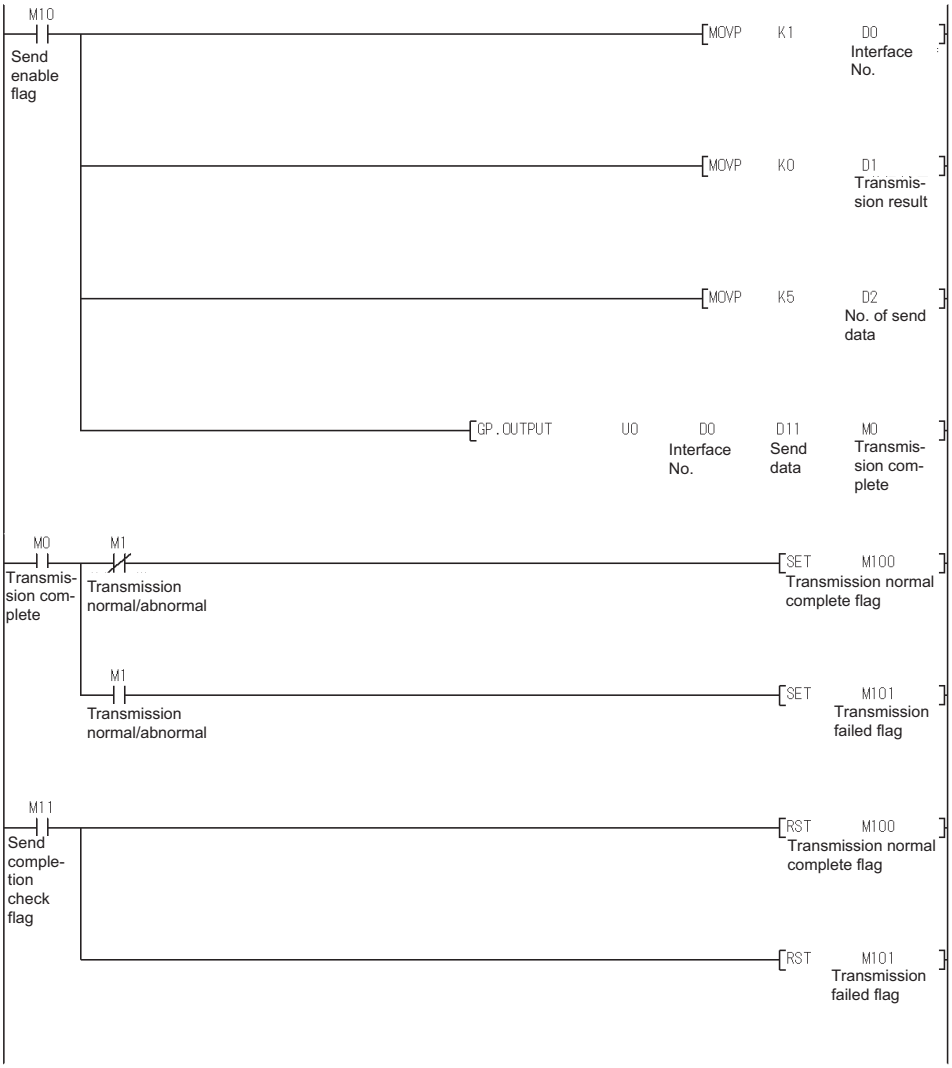


(b) When using dedicated instruction (PRN/INPUT)



(2) Example of program for Q series serial communication module





Transmission processing

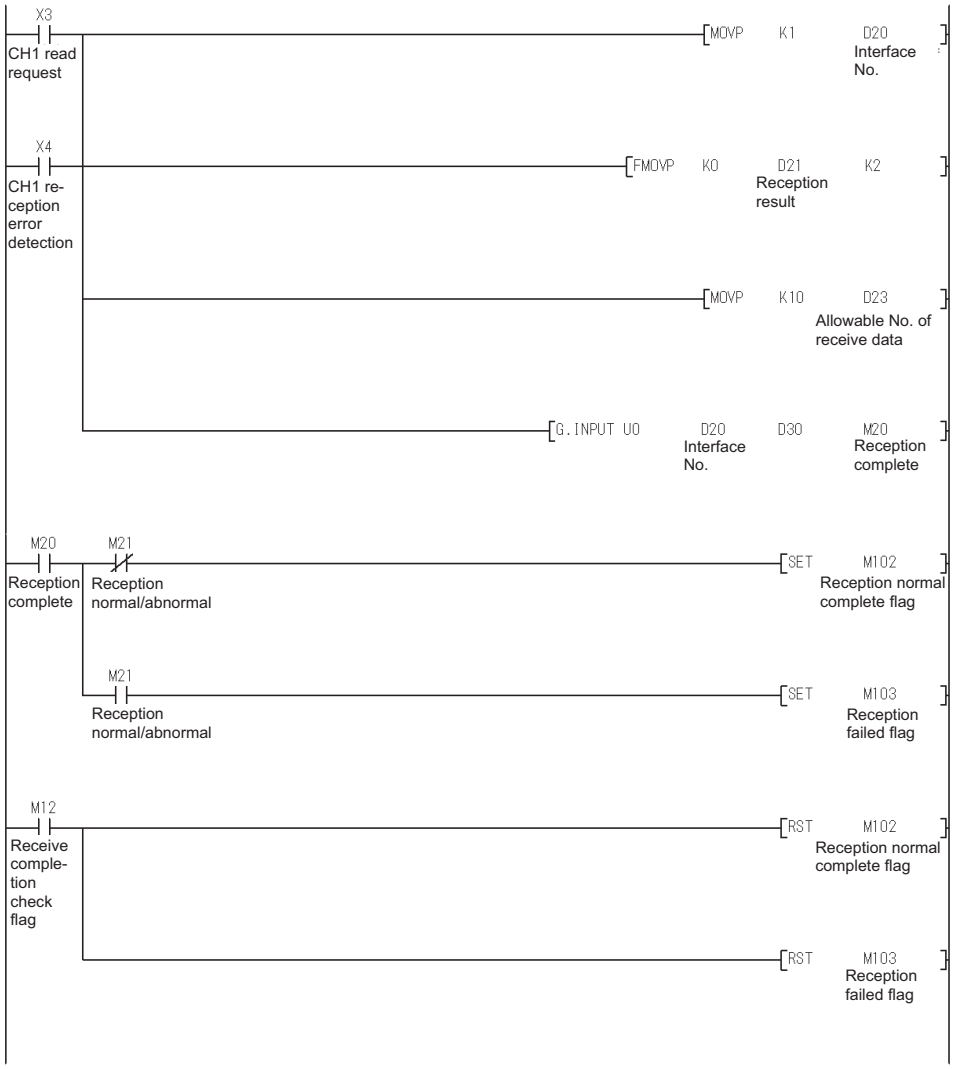
Specifies channel No. for data transmission.

Clears the device where the transmission result is stored.

Specifies No. of send data.

(Instruction execution)
Data stored in the area starting D11 from are sent.

(Flag control at reception completion)



Reception processing

Specifies channel No. for data reception.

Clears the device where the reception result is stored.

Specifies allowable No. of receive data.

(Instruction execution)
Receive data are stored in the area starting from D30.

(Flag control at reception completion)

3 ETHERNET INTERFACE MODULE REPLACEMENT

3.1 List of Ethernet Interface Modules to be Replaced

(1) Transition from A series to Q series

Network type	A series	Alternative model
10BASE-T	AJ71E71N3-T	QJ71E71-100
10BASE5	AJ71E71N-B5	QJ71E71-B5
10BASE2	AJ71E71N-B2	QJ71E71-B2

(2) Transition from AnS series to Q series

Network type	AnS series	Alternative model
10BASE-T	A1SJ71E71N3-T	QJ71E71-100
10BASE5	A1SJ71E71N-B5	QJ71E71-B5
10BASE2	A1SJ71E71N-B2	QJ71E71-B2

(3) Transition from QnA series to Q series

Network type	QnA series	Alternative model
10BASE-T	AJ71QE71N3-T	QJ71E71-100
10BASE5	AJ71QE71N-B5	QJ71E71-B5
10BASE2	AJ71QE71N-B2	QJ71E71-B2

(4) Transition from QnAS series to Q series

Network type	QnAS series	Alternative model
10BASE-T	A1SJ71QE71N3-T	QJ71E71-100
10BASE5	A1SJ71QE71N-B5	QJ71E71-B5
10BASE2	A1SJ71QE71N-B2	QJ71E71-B2

3.2 Performance Specifications Comparison

3.2.1 Module performance comparison

(1) Comparison between A/AnS series and Q series

(a) 10BASE-T

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		A series	AnS series	Q series		
		AJ71E71N3-T	A1SJ71E71N3-T	QJ71E71-100		
Transmission specifications	Transmission speed	10Mbps		100Mbps/10Mbps	○	
	Communication mode	Half-duplex		Full duplex/Half-duplex	○	
	Transmission method	Base band			○	
	Maximum segment length	100m*1			○	
	Maximum number of nodes/connection	Cascade connection: Up to 4			○	Up to two modules can be connected in a cascade connection when using at 100 Mbps.
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	△	Change the sequence program as buffer memory assignments differ. (Refer to Section 3.6.2.)
	Random access buffer	3k words × 2		6k words × 1	△	
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	

*1 Length between hub and node

(b) 10BASE5

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		A series	AnS series	Q series		
		AJ71E71N-B5	A1SJ71E71N-B5	QJ71E71-B5		
Transmission specifications	Transmission speed	10Mbps			○	
	Communication mode	Half-duplex			○	
	Transmission method	Base band			○	
	Max. distance between nodes	2500m			○	
	Maximum segment length	500m			○	
	Maximum number of nodes/connection	100/segment			○	
	Minimum node interval	2.5m			○	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	△	Change the sequence program as buffer memory assignments differ. (Refer to Section 3.6.2.)
	Random access buffer	3k words × 2		6k words × 1	△	
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	
12V DC external power supply capacity (Transceiver)		Use a transceiver and AUI cables that satisfy specifications.			○	

(c) 10BASE2

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		A series	AnS series	Q series		
		AJ71E71N-B2	A1SJ71E71N-B2	QJ71E71-B2		
Transmission specifications	Transmission speed	10Mbps			○	
	Communication mode	Half-duplex			○	
	Transmission method	Base band			○	
	Max. distance between nodes	925m			○	
	Maximum segment length	185m			○	
	Maximum number of nodes/connection	30/segment			○	
	Minimum node interval	0.5m			○	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	△	Change the sequence program as buffer memory assignments differ. (Refer to Section 3.6.2.)
	Random access buffer	3k words × 2		6k words × 1	△	
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	

(2) Comparison between QnA/QnAS series and Q series

(a) 10BASE-T

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
		AJ71QE71N3-T	A1SJ71QE71N3-T	QJ71E71-100		
Transmission specifications	Transmission speed	10Mbps		100Mbps/10Mbps	○	
	Communication mode	Half-duplex		Full duplex/Half-duplex	○	
	Transmission method	Base band			○	
	Maximum segment length	100m*1			○	
	Maximum number of nodes/connection	Cascade connection: Up to 4			○	Up to two modules can be connected in a cascade connection when using at 100 Mbps.
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	○	
	Random access buffer	6k words × 1			○	
No. of E^2PROM writes		Max. 100,000 times on same area in E^2PROM		-	△	No E^2PROM (Refer to Section 3.8.)
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	

*1 Length between hub and node

(b) 10BASE5

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
		AJ71QE71N-B5	A1SJ71QE71N-B5	QJ71E71-B5		
Transmission specifications	Transmission speed	10Mbps			○	
	Communication mode	Half-duplex			○	
	Transmission method	Base band			○	
	Max. distance between nodes	2500m			○	
	Maximum segment length	500m			○	
	Maximum number of nodes/connection	100/segment			○	
	Minimum node interval	2.5m			○	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	○	
	Random access buffer	6k words × 1			○	
No. of E^2PROM writes		Max. 100,000 times on same area in E^2PROM		-	△	No E^2PROM (Refer to Section 3.8.)
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	
12V DC external power supply capacity (Transceiver)		Use a transceiver and AUI cables that satisfy specifications.			○	

(c) 10BASE2

○: compatible, △: partial change required, ×: Incompatible

Item		Specifications			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
		AJ71QE71N-B2	A1SJ71QE71N-B2	QJ71E71-B2		
Transmission specifications	Transmission speed	10Mbps			○	
	Communication mode	Half-duplex			○	
	Transmission method	Base band			○	
	Max. distance between nodes	925m			○	
	Maximum segment length	185m			○	
	Maximum number of nodes/connection	30/segment			○	
	Minimum node interval	0.5m			○	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections		16 connections	○	
	Fixed buffer	1k word × 8		1k word × 16	○	
	Random access buffer	6k words × 1			○	
No. of E^2PROM writes		Max. 100,000 times on same area in E^2PROM		-	△	No E^2PROM (Refer to Section 3.8.)
No. of occupied I/O points		32 points/slot (I/O assignment special 32 points)		32 points/slot (I/O assignment intelli 32 points)	○	

3.2.2 Cable specifications comparison

The Q series can use connectable devices (e.g. hubs*1, cables, transceivers*2 *3) that are being used on the A/AnS/QnAQnAS series.
For details on connectable devices, refer to the Q Corresponding Ethernet Interface Module User's Manual (Basic).

*1 When connecting a hub that does not have the auto-negotiation function
On a connection with a hub that does not have the auto-negotiation function, set the hub side to the half-duplex communication mode.

*2 About wiring of the external power supply terminal (for the transceiver) on the QJ71E71-B5
An FG terminal is not provided for the external power supply terminal on the QJ71E71-B5.
When handling the FG terminal on the external power supply (for the transceiver), ground the FG signal on the external power supply side.

*3 The shape of the external power supply terminal (for the transceiver) differs between the QnA series QJ71QE71N-B5 and the Q series QJ71E71-B5. When replacing the AJ71QE71N-B5 with the Q series QJ71E71-B5, refer to the following manual for wiring.
Q Corresponding Ethernet Interface Module User's Manual (Basic)

3.3 Function Comparison

(1) Comparison between A/AnS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

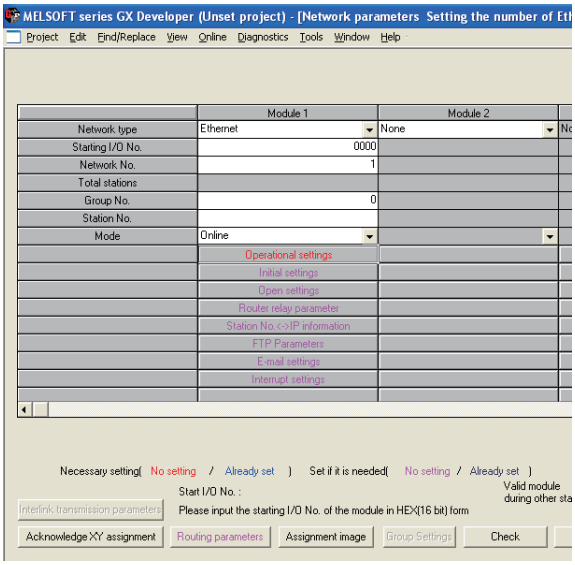
Item	Description			Compat-ibility	Precautions for replacement
	A series	AnS series	Q series		
	AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	A1SJ71E71N3-T A1SJ71E71N-B5 A1SJ71E71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Initial processing	The state in which data communications with an external device is possible is set.			△	Set in the GX Developer network parameters.*1 (Delete the sequence program of the section corresponding to the function.) (Refer to Section 3.9.)
Open processing	The communications line for performing data communications with external devices is connected.			△	Change to a sequence program that uses the dedicated instructions (OPEN, CLOSE).*5 (Refer to Section 3.9.)
Communications using fixed buffer (procedural, nonprocedural)	The fixed buffer on the Ethernet interface module is used to send/receive the desired data between the programmable controller CPU and external devices.			△	Change to a sequence program that uses the dedicated instructions (BUFSND, BUFRCV).(Refer to Section 3.9.)
Communications using random access buffer	Data is read/written to the random access buffer of the Ethernet interface module from multiple external devices.			△	Change the sequence program as buffer memory assignments differ. (Refer to Section 3.6.2.)
Read/write communications of programmable controller CPU internal data	Programmable controller CPU data is read/written to and from external devices.			△	Some of the commands and device ranges are restricted. (Refer to Section 3.7.)
Broadcast communication	Data is sent/received to all external devices on the same Ethernet network as the Ethernet interface module by UDP/IP-based data communications. (broadcast)			○	
Communications while the programmable controller CPU is stopped	Data communications can be continued when the programmable controller CPU enters a stop state. (during passive open processing)			△	Set in the GX Developer network parameters.*2 (Delete the sequence program of the section corresponding to the function.)
Router relay function	Data communications is performed via a router and a gateway.			△	Delete the sequence program of the section corresponding to the function, and set in the GX Developer network parameters.*3 Set in the GX Developer network parameters.*3 (Delete the sequence program of the section corresponding to the function.)
Existence check of external device	Whether or not the external device is operating normally after the connection is established (in open processing) is checked.			△	Change to a sequence program that uses the dedicated instructions (OPEN).*5
Communications using pairing open	The connection is opened with connection for reception and connection for transmission as a single pair. (for fixed buffer communications)			△	Change to a sequence program that uses the dedicated instructions (OPEN).*4*5
Unit of timer set values for data communications	Set the unit (500 ms/2 s) of timer values		Fixed to 500 ms	△	Set in the GX Developer network parameters. (Delete the sequence program of the section corresponding to the function.) The unit of timer set values is 500 ms.

*1 Initial Processing

The Q series performs initial processing by setting the following items in the GX Developer network parameters.

- "Network parameters Setting the number of Ethernet/CC IE/MELSECNET cards"
- "Operational settings"
- "Initial settings"

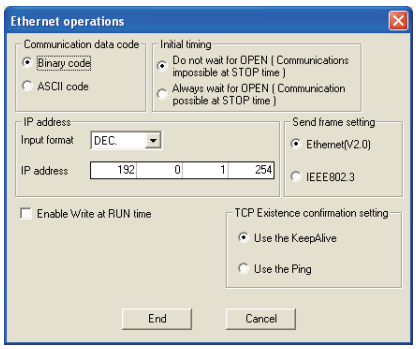
There is no need for a sequence program for initial processing/end processing.



*2 Communications while the programmable controller CPU is stopped

By setting "Operational settings" - "Initial timing" to "Always wait for OPEN", the Q series can perform communications while the programmable controller CPU is stopped.

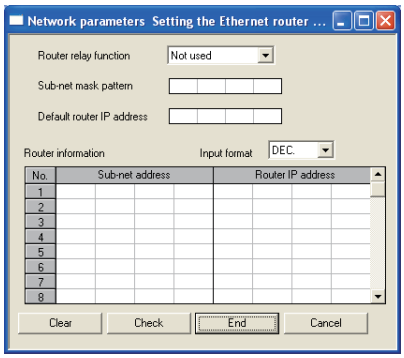
For connections for which passive open and communications during a stop are set to enabled, it is not necessary to use a sequence program for communications during a stop/open processing/close processing.



*3 Router relay function

The Q series sets the router relay function at "Network parameters" - "router relay parameter" on GX Developer.

There is no need for a sequence program for the router relay function.



*4 Communications using pairing open
On the Q series, the pairing open setting of connection No.8 is not possible.
(Connection No.8 is pairing for reception, and connection No.1 is pairing for transmission.)
When the pairing open setting of connection No.8 has been made, change the sequence program.
On the Q series, the pairing open settings of connection No.1 to 7, and 9 to 15 are possible.

*5 Open processing
When "Operational settings" - "Initial timing" in GX Developer is set to "Always wait for OPEN", the sequence program using dedicated instruction (OPEN/CLOSE) is not required.

(2) Comparison between QnA/QnAS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

Item		Description			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
		AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Initial processing	Sequence program	The state in which data communications with an external device is possible is set.			△	Some communications are restricted.*1
	GX Developer network parameters				○	
Open processing		The communications line for performing data communications with external devices is connected.			○	
Communications using fixed buffer (procedural, nonprocedural)		The fixed buffer on the Ethernet interface module is used to send/ receive the desired data between the programmable controller CPU and external devices.			○	
Communications using random access buffer		Data is read/written to the random access buffer of the Ethernet interface module from multiple external devices.			○	
Read/write communications of programmable controller CPU internal data		Programmable controller CPU data is read/written to and from external devices.			△	Some of the commands and device ranges are restricted. (Refer to Section 3.7.)
Communications using data link instructions		Use data link instructions to read/write programmable controller CPU data of other stations via Ethernet.			○	
File transfer (FTP server functions)		Use FTP commands to read/write individual files from external devices.			△	The default log-in name and password have been changed from "AJ71QE71" to "QJ71E71", so set the log-in name again.
Broadcast communication		Data is sent/received to all external devices on the same Ethernet network as the Ethernet interface module by UDP/IP-based data communications. (broadcast)			○	
Communications while the programmable controller CPU is stopped		Data communications can be continued when the programmable controller CPU enters a stop state. (during passive open processing)			△	Delete the sequence program of the section corresponding to the function, and set in the GX Developer network parameters.*2
MELSECNET/H, MELSECNET/10 relay exchange		On a network system comprising a mixture of Ethernet and MELSECNET/H or MELSECNET/10, or a network system that relays through multiple Ethernets, data communications is performed via these multiple networks.			△	Some communications are restricted.*3
Router relay function		Data communications is performed via a router and a gateway.			○	
Existence check of external device		Whether or not the external device is operating normally after the connection is established (in open processing) is checked.			○	
Communications using pairing open		The connection is opened with connection for reception and connection for transmission as a single pair. (For fixed buffer communications)			△	Some communications are restricted.*4
Parameter registration to E^2PROM		Saves parameters to E^2PROM.		-	△	No E^2PROM (Refer to Section 3.8.)

*1 Initial processing using a sequence program

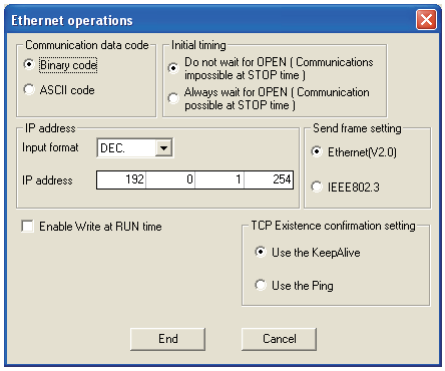
- All of the items (e.g. data code setting) that were set on the QnA series exchange condition setting switch operate in an OFF state.
  To change the communication conditions, add the sequence program for re-initial processing.
- As the network number and station number cannot be set, the Ethernet interface module cannot be connected with MELSOFT products (e.g. GX Developer).

To perform the above, perform initial processing by GX Developer network parameters.

*2 Communications while the programmable controller CPU is stopped

By setting "Operational settings" - "Initial timing" to "Always wait for OPEN", the Q series can perform communications while the programmable controller CPU is stopped.

For connections for which passive open and communications during a stop are set to enabled, it is not necessary to use a sequence program for communications during a stop/open processing/close processing.



*3 MELSECNET/H, MELSECNET/10 relay exchange

On the Q series, Ethernet parameters (network number and station number) using the EPRSET instruction cannot be set.

When the EPRSET instruction is in use, delete the sequence program of the corresponding section, and set the Ethernet parameters in the GX Developer network parameters.

*4 Communications using pairing open

On the Q series, the pairing open setting of connection No.8 is not possible.

(Connection No.8 is pairing for reception, and connection No.1 is pairing for transmission.)

When the pairing open setting of connection No.8 has been made, change the sequence program.

On the Q series, the pairing open settings of connection No.1 to 7, and 9 to 15 are possible.

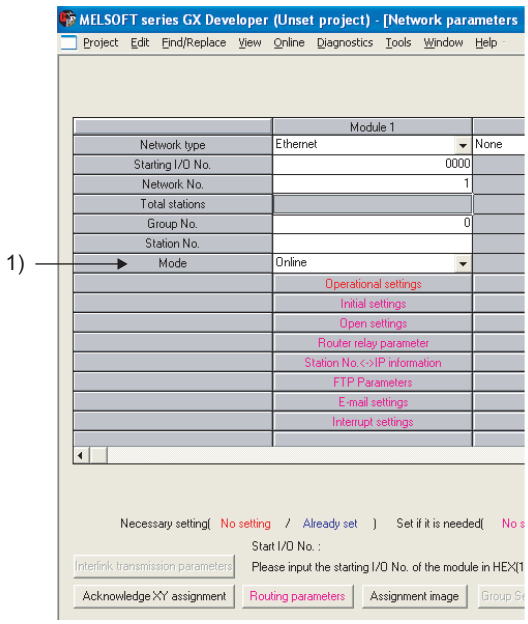
3.4 Switch Setting Comparison

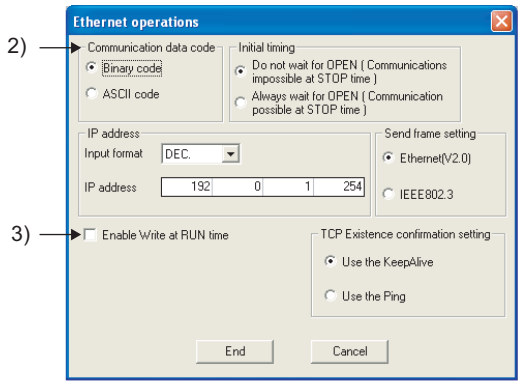
(1) Comparison between A/AnS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

Switch name			Description			Compat-ibility	Precautions for replacement
			A series	AnS series	Q series		
			AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	A1SJ71E71N3-T A1SJ71E71N-B5 A1SJ71E71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Operation mode setting switch			Selects the operation mode. 0: Online 1: Offline 2: Test 1 (self-loopback test) 3: Test 2 (RAM test) 4: Test 3 (ROM test)		-	△	Set in GX Developer network parameters. (1) in *1)
Exchange condition setting switch	SW1	Selection of line processing at a TCP timeout error	Selects line processing when a TCP ULP timeout error occurs. OFF: Closes the line ON: Does not close the line		-	△	Closes the line when a TCP ULP timeout error occurs.
	SW2	Data code setting	Selects the communications data code type. OFF: Binary code ON: ASCII code		-	△	Set in GX Developer network parameters. (2) in *1)
	SW7	CPU communications timing setting	Selects write during RUN enable/disable. OFF: Write during RUN disabled ON: Write during RUN enabled		-	△	Set in GX Developer network parameters. (3) in *1)
	SW8	Initial timing	Selects the initial processing startup timing. OFF: Quick start ON: Normal start		-	△	A quick start is performed (Initial processing starts up with no delay time.)

*1 GX Developer network parameters



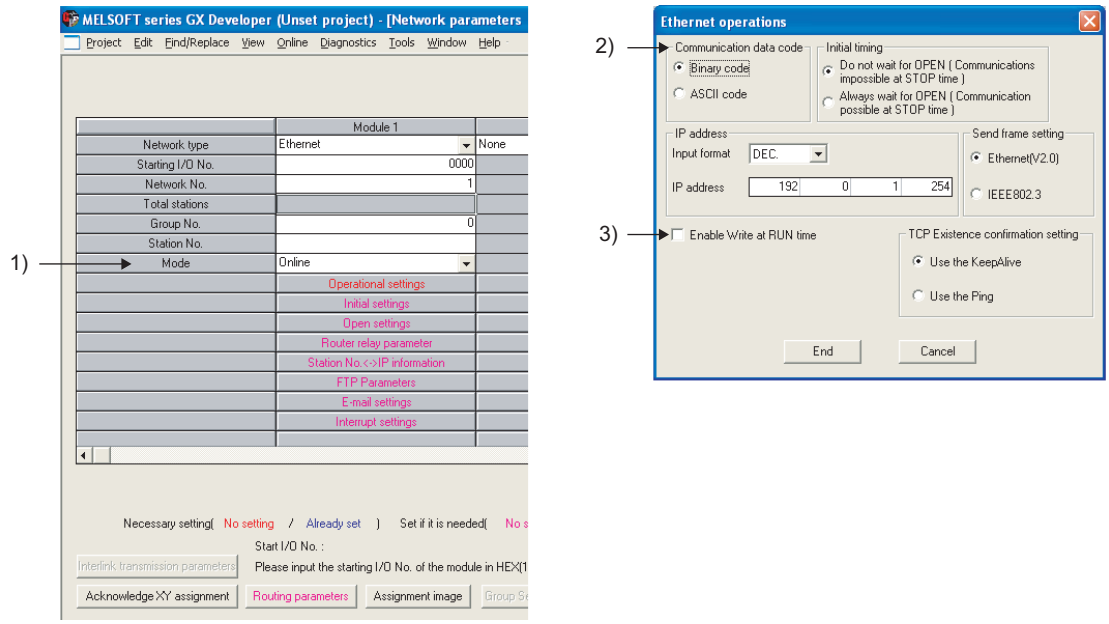


(2) Comparison between QnA/QnAS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

Switch name			Description			Compat-ibility	Precautions for replacement
			QnA series	QnAS series	Q series		
			AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Operation mode setting switch			Selects the operation mode. 0: Online 1: Offline 2: Test 1 (self-loopback test) 3: Test 2 (RAM test) 4: Test 3 (ROM test) 5: Test 4 (E^2PROM test)	-	△	Set in GX Developer network parameters. (1) in *1)
Exchange condition setting switch	SW1	Selection of line processing at a TCP timeout error	Selects line processing when a TCP ULP timeout error occurs. OFF: Closes the line ON: Does not close the line	-	△	Closes the line when a TCP ULP timeout error occurs.
	SW2	Data code setting	Selects the communications data code type. OFF: Binary code ON: ASCII code	-	△	Set in GX Developer network parameters. (2) in *1)
	SW3	Automatic startup mode setting	Selects the startup method when a module is started. OFF: Operation follows Y19 ON: Operation regardless of Y19	-	△	Operation follows the setting of Y19.*2
	SW7	CPU communications timing setting	Selects write during RUN enable/disable. OFF: Write during RUN disabled ON: Write during RUN enabled	-	△	Set in GX Developer network parameters. (3) in *1)
	SW8	Initial timing	Selects the initial processing startup timing. OFF: Quick start ON: Normal start	-	△	A quick start is performed (Initial processing starts up with no delay time.)

*1 GX Developer network parameters



*2 When performing initial processing using GX Developer network parameters, initial processing is executed automatically. (There is no need for a sequence program for initial processing/end processing.)

3.5 Parameter Comparison

(1) Comparison between A/AnS series and Q series

On the A/AnS series, the parameters of the Ethernet interface module are set in the buffer memory. On the Q series, however, the parameters are set using GX Developer network parameters. Therefore, there is no compatibility between the parameters of the A/AnS series and the Q series. When replacing the A/AnS series with the Q series, delete the parameter settings of the A/AnS series and set new parameters on GX Developer.

(2) Comparison between QnA/QnAS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

Parameter name	Description			Compat-ibility	Precautions for replacement
	QnA series	QnAS series	Q series		
	AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Network parameter	Network type			○	
	Start I/O No.			○	
	Network No.			○	
	Group No.			○	
	Station No.			○	
	-		Mode	△	On the QnA series, the mode was set on the operation mode setting switch.
	IP address setting		Operational setting	○	
	-		Initial settings	△	On the QnA series, the setting was set in the sequence program.
	-		Open settings	△	
	Station No. <-> IP information			○	
	FTP Parameters			○	
	Router relay parameter			○	
	Routing parameters			○	

3.6 Program Comparison

3.6.1 I/O signal

(1) Comparison between A/AnS series and Q series

○: Compatible, △: Partial change required, ×: Incompatible

Input signal	Signal name			Compat-ibility	Precautions for replacement
	A series	AnS series	Q series		
	AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	A1SJ71E71N3-T A1SJ71E71N-B5 A1SJ71E71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Xn0	Transmission normal end or reception end (For connection No.1)			○	
Xn1	Transmission error detection or reception error detection (For connection No.1)			○	
Xn2	Transmission normal end or reception end (For connection No.2)			○	
Xn3	Transmission error detection or reception error detection (For connection No.2)			○	
Xn4	Transmission normal end or reception end (For connection No.3)			○	
Xn5	Transmission error detection or reception error detection (For connection No.3)			○	
Xn6	Transmission normal end or reception end (For connection No.4)			○	
Xn7	Transmission error detection or reception error detection (For connection No.4)			○	
Xn8	Transmission normal end or reception end (For connection No.5)			○	
Xn9	Transmission error detection or reception error detection (For connection No.5)			○	
XnA	Transmission normal end or reception end (For connection No.6)			○	
XnB	Transmission error detection or reception error detection (For connection No.6)			○	
XnC	Transmission normal end or reception end (For connection No.7)			○	
XnD	Transmission error detection or reception error detection (For connection No.7)			○	
XnE	Transmission normal end or reception end (For connection No.8)			○	
XnF	Transmission error detection or reception error detection (For connection No.8)			○	
X(n+1)0	Open end (For connection No.1)			○	
X(n+1)1	Open end (For connection No.2)			○	
X(n+1)2	Open end (For connection No.3)			○	
X(n+1)3	Open end (For connection No.4)			○	
X(n+1)4	Open end (For connection No.5)			○	
X(n+1)5	Open end (For connection No.6)			○	
X(n+1)6	Open end (For connection No.7)			○	
X(n+1)7	Open end (For connection No.8)			○	
X(n+1)8	Open error detection			○	
X(n+1)9	Initial normal end			○	
X(n+1)A	Initial error end			○	
X(n+1)B	Use prohibited			○	
X(n+1)C	COM. ERR LED ON			○	
X(n+1)D	Use prohibited			○	
X(n+1)E					
X(n+1)F	Watchdog timer error detection			○	

○: Compatible, △: Partial change required, ×: Incompatible

Output signal	Signal name			Compat-ibility	Precautions for replacement
	A series	AnS series	Q series		
	AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	A1SJ71E71N3-T A1SJ71E71N-B5 A1SJ71E71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Yn0	Transmission request or reception end check (For connection No.1)			○	
Yn1	Transmission request or reception end check (For connection No.2)			○	
Yn2	Transmission request or reception end check (For connection No.3)			○	
Yn3	Transmission request or reception end check (For connection No.4)			○	
Yn4	Transmission request or reception end check (For connection No.5)			○	
Yn5	Transmission request or reception end check (For connection No.6)			○	
Yn6	Transmission request or reception end check (For connection No.7)			○	
Yn7	Transmission request or reception end check (For connection No.8)			○	
Yn8	Open request (For connection No.1)			○	
Yn9	Open request (For connection No.2)			○	
YnA	Open request (For connection No.3)			○	
YnB	Open request (For connection No.4)			○	
YnC	Open request (For connection No.5)			○	
YnD	Open request (For connection No.6)			○	
YnE	Open request (For connection No.7)			○	
YnF	Open request (For connection No.8)			○	
Y(n+1)0	Use prohibited			○	
Y(n+1)1					
Y(n+1)2					
Y(n+1)3					
Y(n+1)4					
Y(n+1)5					
Y(n+1)6					
Y(n+1)7	COM. ERR LED OFF request			○	
Y(n+1)8	Use prohibited			○	
Y(n+1)9	Initial request			○	
Y(n+1)A	Use prohibited			○	
Y(n+1)B					
Y(n+1)C	Buffer memory channel switching		-	△	Buffer memory channel setting is not required. Delete the sequence program of the section corresponding to the function.
Y(n+1)D	Use prohibited			○	
Y(n+1)E					
Y(n+1)F					

(2) Comparison between QnA/QnAS series and Q series

○: compatible, △: partial change required, ×: Incompatible

Input signal	Signal name			Compat-ibility	Precautions for replacement
	QnA series	QnAS series	Q series		
	AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Xn0	Transmission normal end or reception end (For connection No.1)			○	
Xn1	Transmission error detection or reception error detection (For connection No.1)			○	
Xn2	Transmission normal end or reception end (For connection No.2)			○	
Xn3	Transmission error detection or reception error detection (For connection No.2)			○	
Xn4	Transmission normal end or reception end (For connection No.3)			○	
Xn5	Transmission error detection or reception error detection (For connection No.3)			○	
Xn6	Transmission normal end or reception end (For connection No.4)			○	
Xn7	Transmission error detection or reception error detection (For connection No.4)			○	
Xn8	Transmission normal end or reception end (For connection No.5)			○	
Xn9	Transmission error detection or reception error detection (For connection No.5)			○	
XnA	Transmission normal end or reception end (For connection No.6)			○	
XnB	Transmission error detection or reception error detection (For connection No.6)			○	
XnC	Transmission normal end or reception end (For connection No.7)			○	
XnD	Transmission error detection or reception error detection (For connection No.7)			○	
XnE	Transmission normal end or reception end (For connection No.8)			○	
XnF	Transmission error detection or reception error detection (For connection No.8)			○	
X(n+1)0	Open end (For connection No.1)			○	
X(n+1)1	Open end (For connection No.2)			○	
X(n+1)2	Open end (For connection No.3)			○	
X(n+1)3	Open end (For connection No.4)			○	
X(n+1)4	Open end (For connection No.5)			○	
X(n+1)5	Open end (For connection No.6)			○	
X(n+1)6	Open end (For connection No.7)			○	
X(n+1)7	Open end (For connection No.8)			○	
X(n+1)8	Open error detection			○	
X(n+1)9	Initial normal end			○	
X(n+1)A	Initial error end			○	
X(n+1)B	Use prohibited			○	
X(n+1)C	COM. ERR LED ON			○	
X(n+1)D	E^2PROM read complete		Use prohibited	△	No E^2PROM (Refer to Section 3.8.)
X(n+1)E	E^2PROM write complete			△	
X(n+1)F	Watchdog timer error detection			○	

○: compatible, △: partial change required, ×: Incompatible

Output signal	Signal name			Compat-ibility	Precautions for replacement
	QnA series	QnAS series	Q series		
	AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
Yn0	Transmission request or reception end check (For connection No.1)			○	
Yn1	Transmission request or reception end check (For connection No.2)			○	
Yn2	Transmission request or reception end check (For connection No.3)			○	
Yn3	Transmission request or reception end check (For connection No.4)			○	
Yn4	Transmission request or reception end check (For connection No.5)			○	
Yn5	Transmission request or reception end check (For connection No.6)			○	
Yn6	Transmission request or reception end check (For connection No.7)			○	
Yn7	Transmission request or reception end check (For connection No.8)			○	
Yn8	Open request (For connection No.1)			○	
Yn9	Open request (For connection No.2)			○	
YnA	Open request (For connection No.3)			○	
YnB	Open request (For connection No.4)			○	
YnC	Open request (For connection No.5)			○	
YnD	Open request (For connection No.6)			○	
YnE	Open request (For connection No.7)			○	
YnF	Open request (For connection No.8)			○	
Y(n+1)0	E^2PROM read request		Use prohibited	△	No E^2PROM (Refer to Section 3.8.)
Y(n+1)1	E^2PROM write request			△	
Y(n+1)2	Use prohibited			○	
Y(n+1)3					
Y(n+1)4					
Y(n+1)5					
Y(n+1)6					
Y(n+1)7	COM. ERR LED OFF request			○	
Y(n+1)8	Use prohibited			○	
Y(n+1)9	Initial request			○	
Y(n+1)A	Use prohibited			○	
Y(n+1)B					
Y(n+1)C					
Y(n+1)D					
Y(n+1)E					
Y(n+1)F					

3.6.2 Buffer memory

(1) Comparison between A/AnS series and Q series

There is no compatibility in the buffer memory assignments between the A/AnS series and the Q series. Make a new sequence program.

○: Compatible, △: Partial change required, ×: Incompatible

Buffer memory address		Buffer memory name		Compat-ibility	Precautions for replacement
		A series	AnS series		
HEX	DEC	AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	A1SJ71E71N3-T A1SJ71E71N-B5 A1SJ71E71N-B2		
0 to 1_H	0 to 1	Local station IP address		△	Set in GX Developer network parameters.
2_H	2	Special function setting		△	
3_H	3	Timer setting time units		△	Not used on the Q series
4 to 5_H	4 to 5	System area (Use prohibited)		-	
6_H	6	TCP Maximum Segment transmission setting		△	$1E_H$ (30) is used on the Q series.
7_H	7	Destination existence check start interval timer value		△	Set in GX Developer network parameters.
8_H	8	Destination existence check interval timer value		△	
9_H	9	Destination existence check, No. of retries		△	
A_H	10	TCP ULP timeout value		△	
B_H	11	TCP zero window timer value		△	
C_H	12	TCP retransmit timer value		△	
D_H	13	TCP end timer value		△	
E_H	14	IP reassembly timer value		△	
F_H	15	Response monitoring timer value		△	
10 to 17_H	16 to 23	Application setting area (Connection No.1 to 8)		△	
18 to $4F_H$	24 to 79	Exchange address settings area (Connection No.1 to 8)		△	
50_H	80	Initial error code		△	69_H(105) is used on the Q series.
51 to 52_H	81 to 82	Local station IP address		△	6A to $6B_H$ (106 to 107) is used on the Q series.
53 to 55_H	83 to 85	Local station Ethernet address		△	6C to $6E_H$ (108 to 110) is used on the Q series.
56 to 58_H	86 to 88	System area (Use prohibited)		-	
59 to $A8_H$	89 to 168	Information for each connection (Connection No.1 to 8)		△	78 to $C7_H$ (120 to 199) is used on the Q series.
A9 to $B3_H$	169 to 179	Error log1 to 11		△	E5 to 174_H (229 to 372) is used on the Q series.
B4 to $16F_H$	180 to 367	System area (Use prohibited)		-	
170 to $1A3_H$	368 to 419	Status information by protocol type		△	178 to $1F1_H$ (376 to 497) is used on the Q series.
1A4 to $1BF_H$	420 to 447	System area (Use prohibited)		-	
1C0 to $1C1_H$	448 to 449	Subnet mask field		△	Set in GX Developer network parameters.
1C2 to $1C3_H$	450 to 451	Default router IP address		△	
$1C4_H$	452	No. of registered routers		△	
1C5 to $1D8_H$	453 to 472	Setting of router 1 to 5		△	
1D9 to $1EF_H$	473 to 495	System area (Use prohibited)		-	
$1F0_H$	496	Communication specification during STOP		△	Not used on the Q series
1F1 to $1FF_H$	497 to 511	System area (Use prohibited)		-	
200 to $11FF_H$	512 to 4607	Fixed buffer No.1 to 8		△	680 to $267F_H$ (1664 to 9855) is used on the Q series.
1200 to $1DFF_H$	4608 to 7679	Random access buffer		△	2680 to $3E7F_H$ (9856 to 15999) is used on the Q series.

(2) Comparison between QnA/QnAS series and Q series

The buffer memory assignment of the QnA/QnAS series is compatible with that of the Q series.
The sequence program of the QnA/QnAS series can be used as is.

○: Compatible, △: Partial change required, ×: Incompatible

Buffer memory address		Buffer memory name			Compat-ibility	Precautions for replacement
		QnA series	QnAS series	Q series		
HEX	DEC	AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
0 to 1_H	0 to 1	Local station IP address			○	
2 to 3_H	2 to 3	System area (Use prohibited)			○	
4_H	4	Special function setting			○	
5 to A_H	5 to 10	System area (Use prohibited)			○	
B to13_H	11 to 19	Monitoring timer			○	
14_H	20	Automatically open UDP port No.			○	
15 to $1D_H$	21 to 29	System area (Use prohibited)			○	
$1E_H$	30	TCP Maximum Segment transmission setting			○	
$1F_H$	31	System area (Use prohibited)			○	
20 to 27_H	32 to 39	Application setting area (Connection No.1 to 8)			○	
28 to $5F_H$	40 to 95	Exchange address settings area (Connection No.1 to 8)			○	
60 to 66_H	96 to 102	System area (Use prohibited)			○	
67_H	103	Communication specification during STOP		System area (Use prohibited)	△	Delete the sequence program.
68_H	104	E^2PROM parameter portion specification			△	
69_H	105	Initial error code			○	
6A to $6B_H$	106 to 107	Local station IP address			○	
6C to $6E_H$	108 to 110	Local station Ethernet address			○	
$6F_H$	111	System area			○	
70_H	112	E^2PROM register status		System area (Use prohibited)	△	Delete the sequence program.
71_H	113	Parameter use status			△	
72_H	114	E^2PROM read result			△	
73_H	115	E^2PROM write result			△	
74_H	116	Automatically open UDP port No.			○	
75_H	117	System area (Use prohibited)			○	
76_H	118	Network No./Station No.			○	
77_H	119	Group No.			○	
78 to $C7_H$	120 to 199	Information for each connection (Connection No.1 to 8)			○	
$C8_H$	200	LED ON status (Left side)		LED ON status	△	Check the LED ON status at $C8_H$ (200).
$C9_H$	201	LED ON status (Right side)		Hub connection status area	△	
CA_H	202	Operation mode setting switch status			○	
CB_H	203	Exchange condition setting switch status		GX Developer setting status	△	Stores the setting status of the GX Developer network parameters.
CC_H	204	System area (Use prohibited)			○	
CD_H	205	RECV instruction execution request			○	
CE_H	206	System area (Use prohibited)			○	
CF to DF_H	207 to 223	Data link command execution result by channel			△	Stores the execution result of the ZNRD, ZNWR instructions.
E0 to $E2_H$	224 to 226	System area (Use prohibited)			○	
$E3_H$	227	No. of errors generated			○	
$E4_H$	228	Error log write pointer			○	
E5 to 174_H	229 to 372	Error log block 1 to 16			○	
175 to 177_H	373 to 375	System area (Use prohibited)			○	
178 to $1FF_H$	376 to 511	Status information by protocol type			△	Some assignments differ. For details, refer to the Q Corresponding Ethernet Interface Module User's Manual (Basic).
200 to 201_H	512 to 513	Subnet mask field			○	
202 to 203_H	514 to 515	Default router IP address			○	

○: Compatible, △: Partial change required, ×: Incompatible

Buffer memory address		Buffer memory name			Compat-ibility	Precautions for replacement
HEX	DEC	QnA series AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	QnAS series A1SJ71QE71N3-T A1SJ71QE71N-B5 A1SJ71QE71N-B2	Q series QJ71E71-100 QJ71E71-B5 QJ71E71-B2		
204_H	516	No. of registered routers			○	
205 to 224_H	517 to 548	Setting of router 1 to 8			○	
225 to 227_H	549 to 551	System area (Use prohibited)			○	
228_H	552	Number of conversion table data			○	
229 to $3A8_H$	553 to 936	Conversion information No.1 to 64			○	
3A9 to $3AA_H$	937 to 938	Net mask pattern for MELSECNET/10 routing			○	
3AB to $3AF_H$	939 to 943	System area (Use prohibited)			○	
3B0 to $67F_H$	944 to1663	FTP setting			△	The default log-in name and password have been changed from "AJ71QE71" to "QJ71E71". Set in GX Developer network parameters.
680 to $267F_H$	1664 to 9855	Fixed buffer No.1 to 8			○	
2680 to $3E7F_H$	9856 to15999	Random access buffer			○	

3.7 Reuse of Existing Programs

(1) A/AnS series

○: Compatible, △: Partial change required, ×: Incompatible

Item	Compatibility		Precautions for replacement
	Program (Communication target device)	Sequence program (Ethernet Interface module)	
Communications using fixed buffer (procedural, nonprocedural)	○	△	[Programmable controller side] The sequence program is not compatible as buffer memory assignments differ. Change to a sequence program that uses the dedicated instructions (BUFSND/BUFRCV).
Communications using random access buffer	○	△	[Programmable controller side] The sequence program is not compatible as buffer memory assignments differ. Check the buffer memory assignments and change the sequence program.
Read/write of programmable controller CPU internal data	△	-	[Communication target device side] Some of the command and device ranges are restricted.*1

*1 Read/write of programmable controller CPU internal data

(1) On the Q series, some commands (batch read/writer of microcomputer) are not usable.
For details, refer to the MELSEC communication protocol reference manual.

(2) Devices of the same name that exist on the A/AnS series programmable controller CPU can be read/written within the device ranges of AnACPU.
The following devices cannot be accessed from external devices:
- Devices newly added on by Q/QnACPU
- Latch relays (L) and step relays (S)
- In the case of Q/QnACPU, the internal relays (M), the latch relays (L) and step relays (S) of other devices can not be specified as target devices to be accessed.
- File registers (R)

(3) The following devices are accessed on special relays (M9000 onwards) and special registers (D9000 onwards):
- SD1000 to SD1255 are accessed by specifying D9000 to D9255.
- SM1000 to SM1255 are accessed by specifying M9000 to M9255.

(2) QnA/QnAS series

○: Compatible, △: Partial change required, ×: Incompatible

Item	Compatibility		Precautions for replacement
	Program (Communication target device)	Sequence program (Ethernet Interface module)	
Communications using fixed buffer (procedural, nonprocedural)	○	○	
Communications using random access buffer	○	○	
Read/write of programmable controller CPU internal data	△	-	[Communication target device side] Some of the command and device ranges are restricted.*1
Communications using data link instructions	○	○	
File transfer (FTP server functions)	△	-	[Communication target device side] The default log-in name and password have been changed from "AJ71QE71" to "QJ71E71", so set the log-in name again.

*1 Read/write of programmable controller CPU internal data

(1) Commands relating to file operations on QCPU differ from commands for QnACPU.
For details, refer to the MELSEC communication protocol reference manual.

(2) The program for accessing the programmable controller CPU in the data link system cannot be used.
(The QCPU (Q mode) cannot be connected to MELSECNET (II) and MELSECNET/B.)

3.8 Other Precaution

(1) Parameter registration to E^2PROM

As the Q series Ethernet internet module does not have an E^2PROM, delete the sequence program of the section corresponding to parameter registration to E^2PROM.
On the Q series Ethernet interface module, set the GX Developer network parameters to save parameters to the programmable controller CPU.

(2) Initial processing/end processing

Initial processing using GX Developer network parameters cannot be used jointly with initial processing/ end processing using the sequence program.
When using GX Developer network parameters, delete processing by the sequence program.

(3) Open processing/close processing

Do not use open processing/close processing using I/O signals with open/close processing using dedicated instructions (OPEN/CLOSE) in the same connection.

(4) Passive open processing

The Q series Ethernet interface module cannot cancel open requests before an open end after passive open processing is executed.
Perform close processing after an open end.

(5) Communications using fixed buffer

Do not use fixed buffer communication using I/O signals and fixed buffer communication using dedicated instructions (BUFSND/BUFRCV/BUFRCVS) in the same connection.

(6) About processing time

The data communications processing time differs on the A/AnS/QnAQnAS series modules and Q series modules.
For this reason, the data communications timing, etc. also differ. If necessary, adjust the timing by inserting a wait time, for example.
For actual details on processing times, refer to the manual for the respective module.

(7) Replacement of the 10BASE5/10BASE2 with the 100BASE-TX/10BASE-T

The A/AnS/QnA/QnAS series 10BASE5/10BASE2 module can be also replaced with the Q series 100BASE-TX/10BASE-T module. Note that a media converter is required. For details, refer to the following TECHNICAL BULLETIN.
TECHNICAL BULLETIN No. FA-A-0075 "Production discontinuation of the AnS and QnAS series Ethernet interface modules"

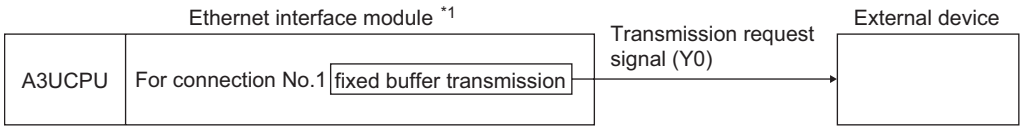
3.9 Program Examples

The following shows a program example at transition from the A/AnS series to the Q series. When applying the program example introduced in this section to an actual program, sufficiently study if there will be any problem in control on the target system.

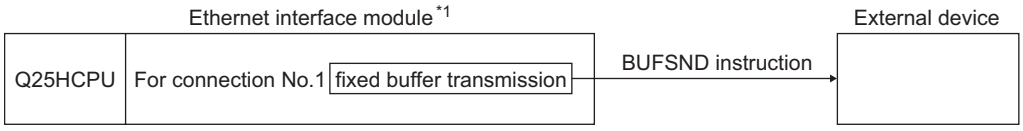
(1) System configuration

The following shows the system configuration used in the program example in this section.

(a) A/AnS series



(b) Q series



*1 The Ethernet interface module is mounted on slot 0 of the base module.
The I/O signals of the Ethernet interface module shall be X/Y0 to X/YF.

3.9.1 Initial processing

The following shows a program example for performing initial processing.

(1) A/AnS series

The A/AnS series performs initial processing by writing parameters for initial processing by the sequence program to buffer memory and turning the initial request signal (Y19) ON.

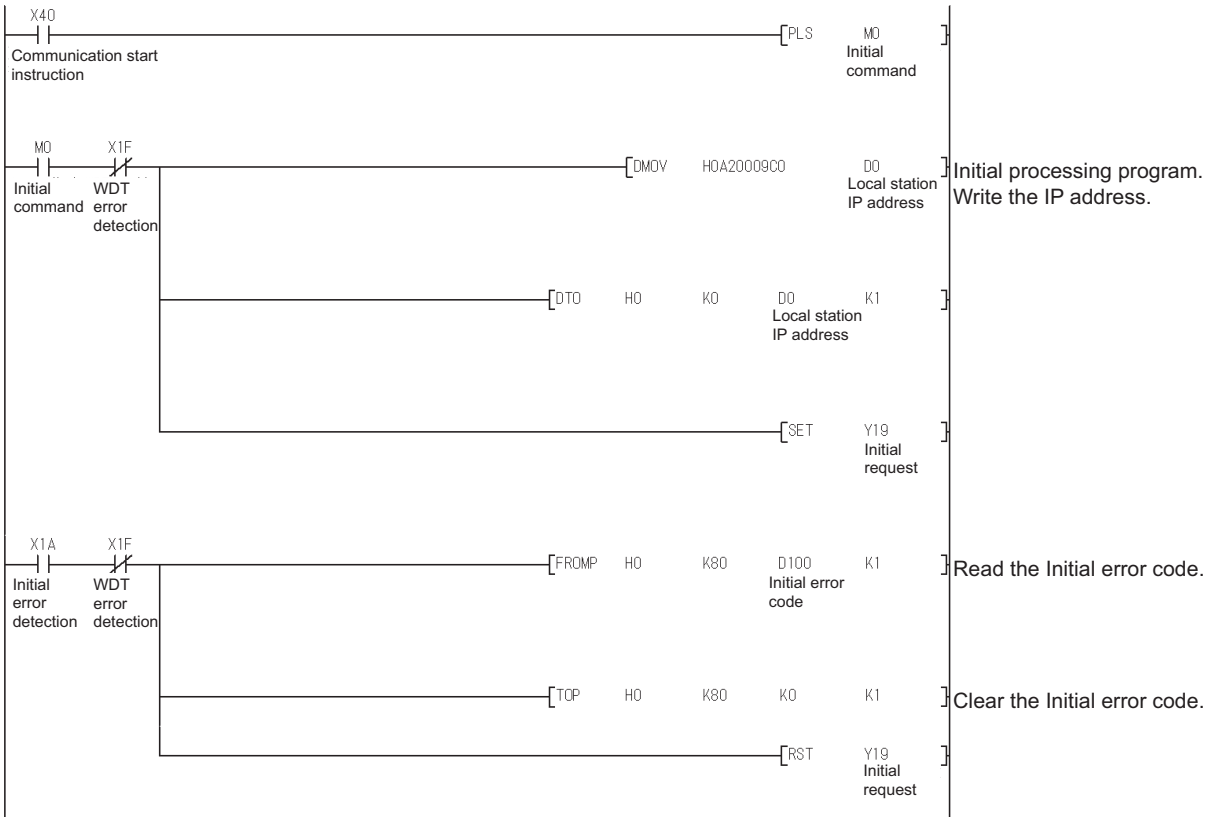
(a) Program conditions

The following shows a program example for performing initial processing when the communication start instruction (X40) is turned ON.

Set the parameters for initial processing as follows. (Otherwise, use default values.)

Buffer memory address DEC (HEX)	Item	Set value
0 to 1 (0 to 1_H)	Local station IP address	$A20009C0_H$ (162.0.9.192)

(b) Program example


X40
Communication start instruction
PLS M0 Initial command
M0 Initial command
X1F WDT error detection
DMOV H0A20009C0 D0 Local station IP address
Initial processing program. Write the IP address.
DTO H0 K0 D0 Local station IP address K1
SET Y19 Initial request
X1A Initial error detection
X1F WDT error detection
FROMP H0 K80 D100 Initial error code K1
Read the Initial error code.
TOP H0 K80 K0 K1
Clear the Initial error code.
RST Y19 Initial request

Point

On the Q series, the parameter for initial processing is set using GX Developer network parameters. When replacing the A/AnS series with the Q series, refer to Section 3.9.1 (1) to delete the program where the parameter for initial processing is set and set the parameter using GX Developer network parameters.

(2) Q series

The Q series performs initial processing by setting the following items in the GX Developer network parameters.

- "Network Parameter Setting the Number of Ethernet/CC IE/MELSECNET Cards"
- "Operational settings"
- "Initial settings"

When replacing the A/AnS series with the Q series, delete the A/AnS series' sequence program for initial processing.

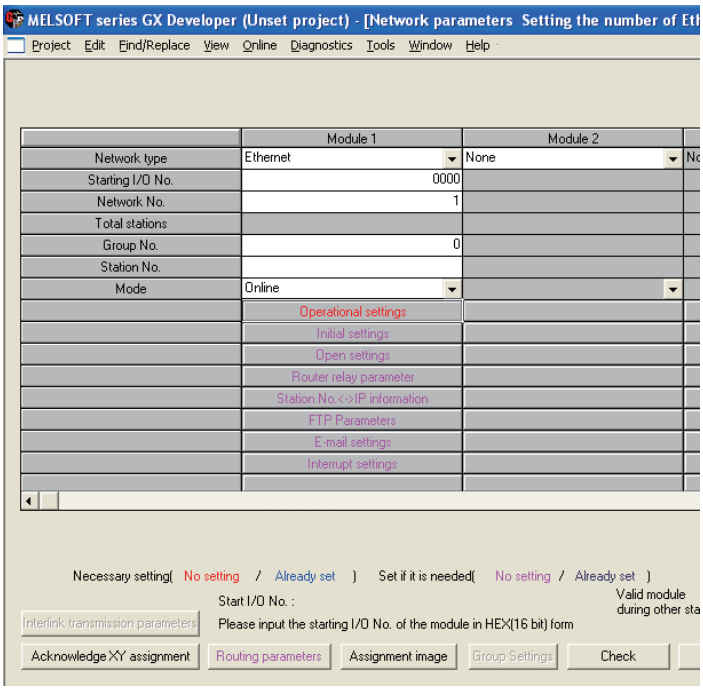
(a) Program conditions

Set as follows in the GX Developer network parameters:

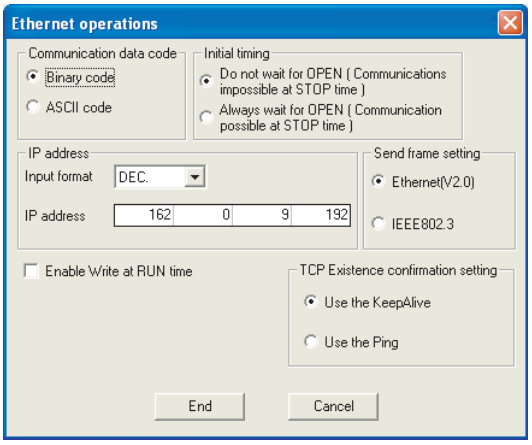
- IP address: A20009C0H (162.0.9.192)
- Other than IP address: Use default values.

(b) Network parameter setting example

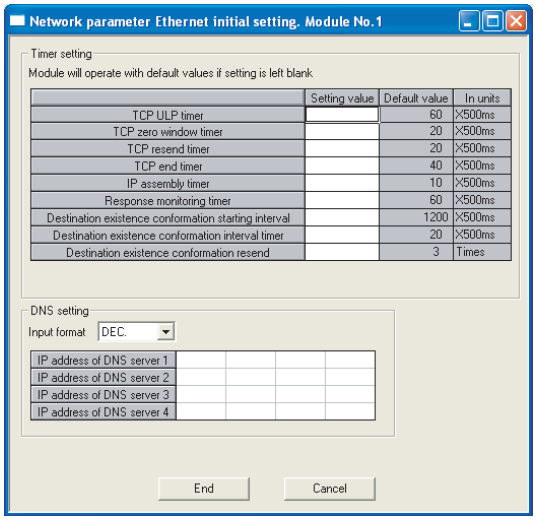
1) "Network parameters Setting the number of Ethernet/CC IE/MELSECNET cards"



2) "Operational settings"



3) "Initial settings"


Network parameter Ethernet initial setting. Module No.1
Timer setting
Module will operate with default values if setting is left blank
Setting value
Default value
In units
TCP ULP timer 60 X500ms
TCP zero window timer 20 X500ms
TCP resend timer 20 X500ms
TCP end timer 40 X500ms
IP assembly timer 10 X500ms
Response monitoring timer 60 X500ms
Destination existence conformation starting interval 1200 X500ms
Destination existence conformation interval timer 20 X500ms
Destination existence conformation resend 3 Times
DNS setting
Input format
DEC.
IP address of DNS server 1
IP address of DNS server 2
IP address of DNS server 3
IP address of DNS server 4
End
Cancel

3.9.2 Open/close processing

The following shows a program example for performing open processing/close processing.

(1) A/AnS series

[Open processing]

The A/AnS series performs open processing by writing communication parameters by the sequence program to buffer memory and turning the open request signal (Y8) ON.

[Close processing]

The A/AnS series performs close processing by turning the open request signal (Y8) OFF, or by the close request (FIN) from an external device.

(a) Program conditions

The following shows a program example for performing open processing (unpassive open) on connection No.1 when initial normal end (X19) turns ON.

Set the communication parameters as follows. (Otherwise, use default values.)

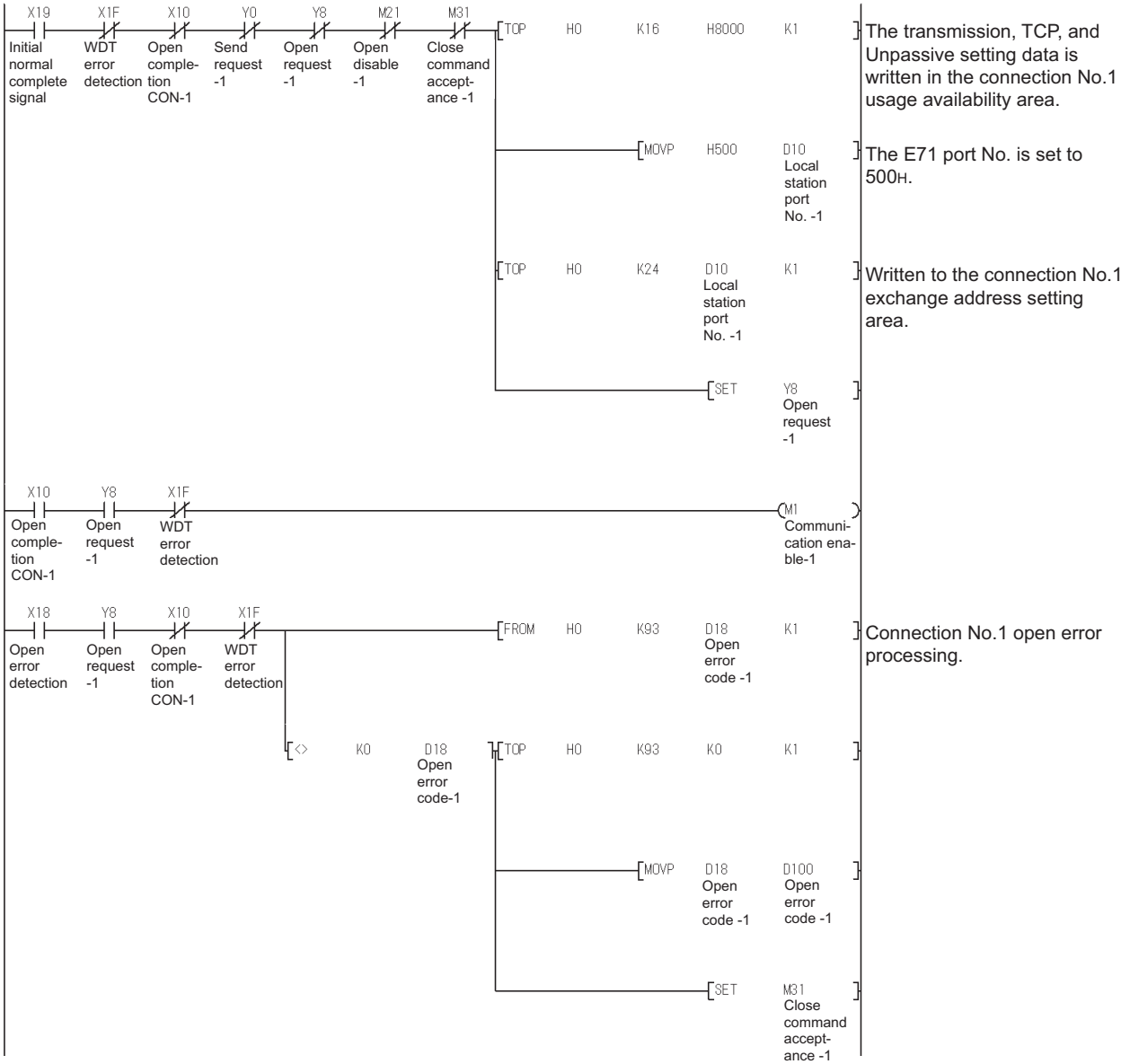
Buffer memory address DEC (HEX)	Item		Set value
16 (10_H)	Connection No.1 application setting area		8000_H
	Sets the application of the fixed buffer (b0).	0: Transmission	
	Destination existence check setting (b1)	0: Existence check 0: No existence check	
	Pairing open setting (b7)	0: Pairing open 0: Not pairing open	
	Communication method (protocol) Communication protocol setting (b8)	0: TCP/IP	
	Communications using fixed buffer procedure performed/not performed (b9)	0: Performed	
	Open method setting (b15, b14)	10: Unpassive open	
24 (18_H)	Host port number (For connection No.1)		500_H

Point

The open processing and the close processing on the Q series have different methods from those on the A/AnS series.

When replacing the A/AnS series with the Q series, refer to Section 3.9.2 (2) and change the program of the open processing and close processing.

(b) Program example



(2) Q series

[Open processing]

The Q series uses the dedicated instruction (OPEN) to perform open processing.

The communication parameters can be set using one of the following methods:

- In the control data of the dedicated instruction (OPEN)
- On GX Developer, select "Network parameter" - "Network Parameter Setting the Number of Ethernet/CC IE/MELSECNET Cards" - (Ethernet) - "Open settings".

[Close processing]

The Q series performs close processing by either using the dedicated instruction (CLOSE), or by the close request (FIN) from an external device.

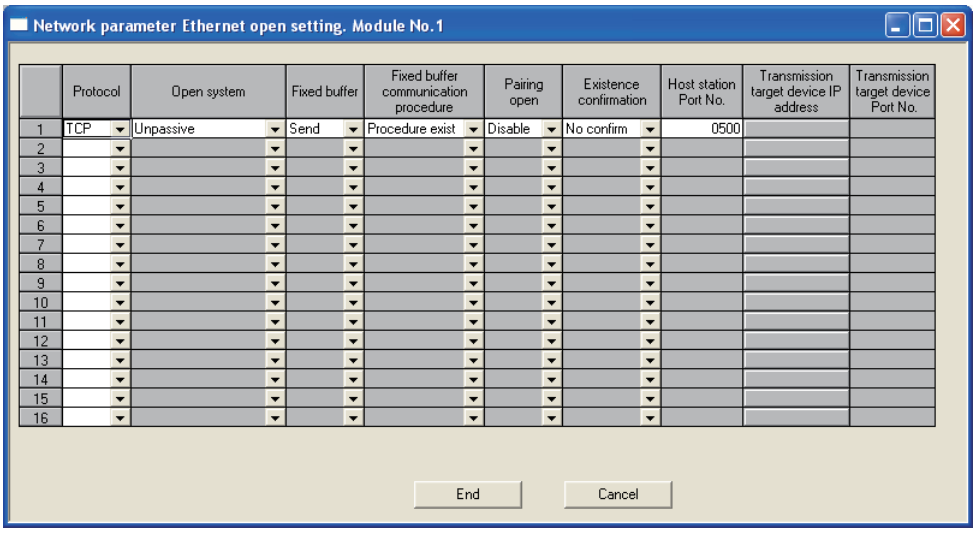
(a) Program conditions

The following shows a program example for performing open processing (unpassive open) on connection No.1 when initial normal end (X19) turns ON with the initial normal end signal (M5000) ON.

Set the communication parameters in "Network parameters" on GX Developer.

(b) Network parameter setting example

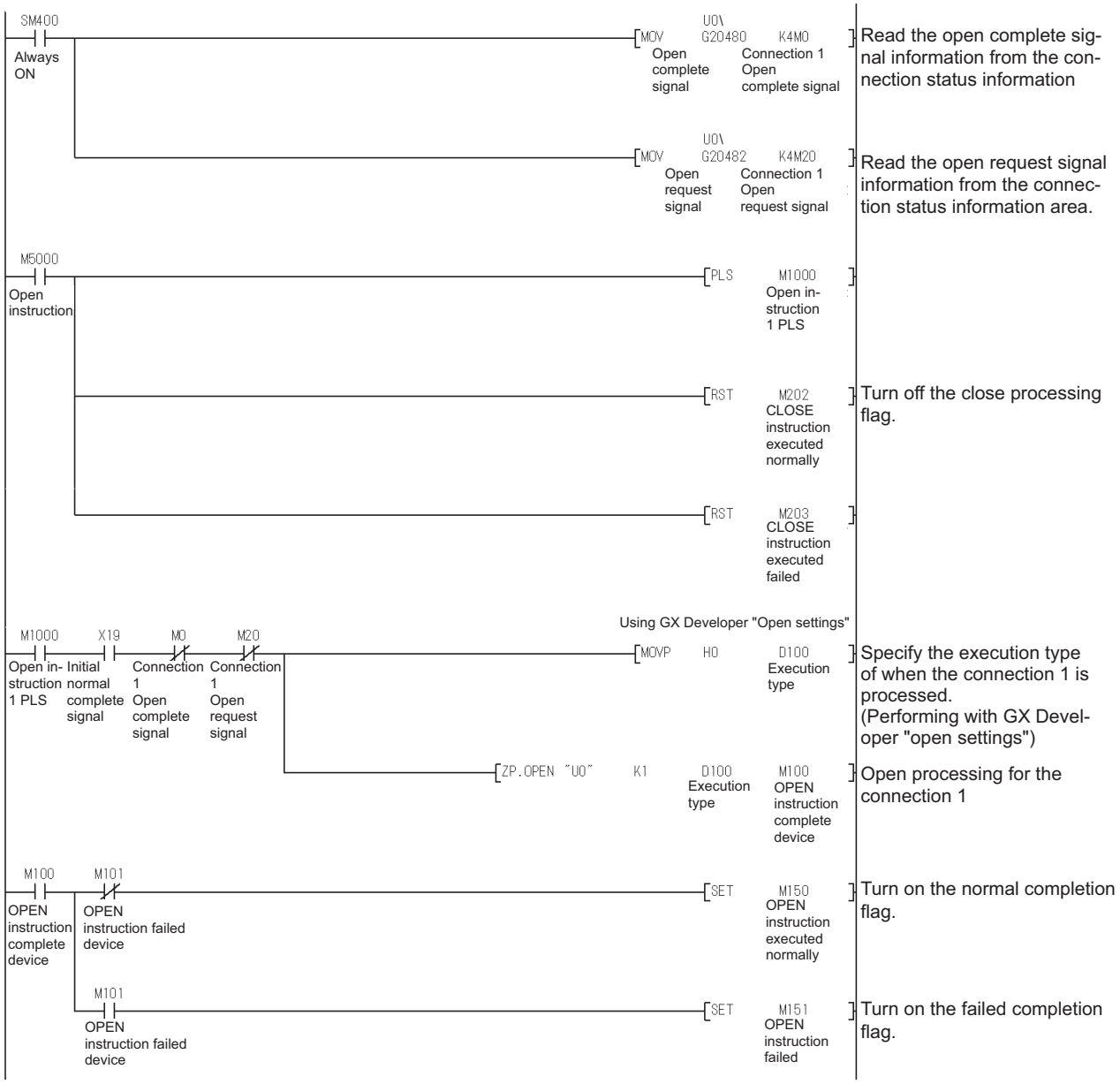
1) "Open settings"



Point

When replacing the A/AnS series with the Q series, change the open processing/close processing program of the A/AnS series to that of the Q series.

(c) Program example



Point

When "Operational settings" - "Initial timing" in GX Developer is set to "Always wait for OPEN", the sequence program for open processing/close processing is not required.

3.9.3 Communication using fixed buffer

The following shows a program example for performing communication using fixed buffer.

(1) A/AnS series

[Transmission processing]

The A/AnS series performs data transmission processing to external devices from the fixed buffer by writing the send data to the fixed buffer area by the sequence program, and turning the send request signal (Y0) ON.

[Reception processing]

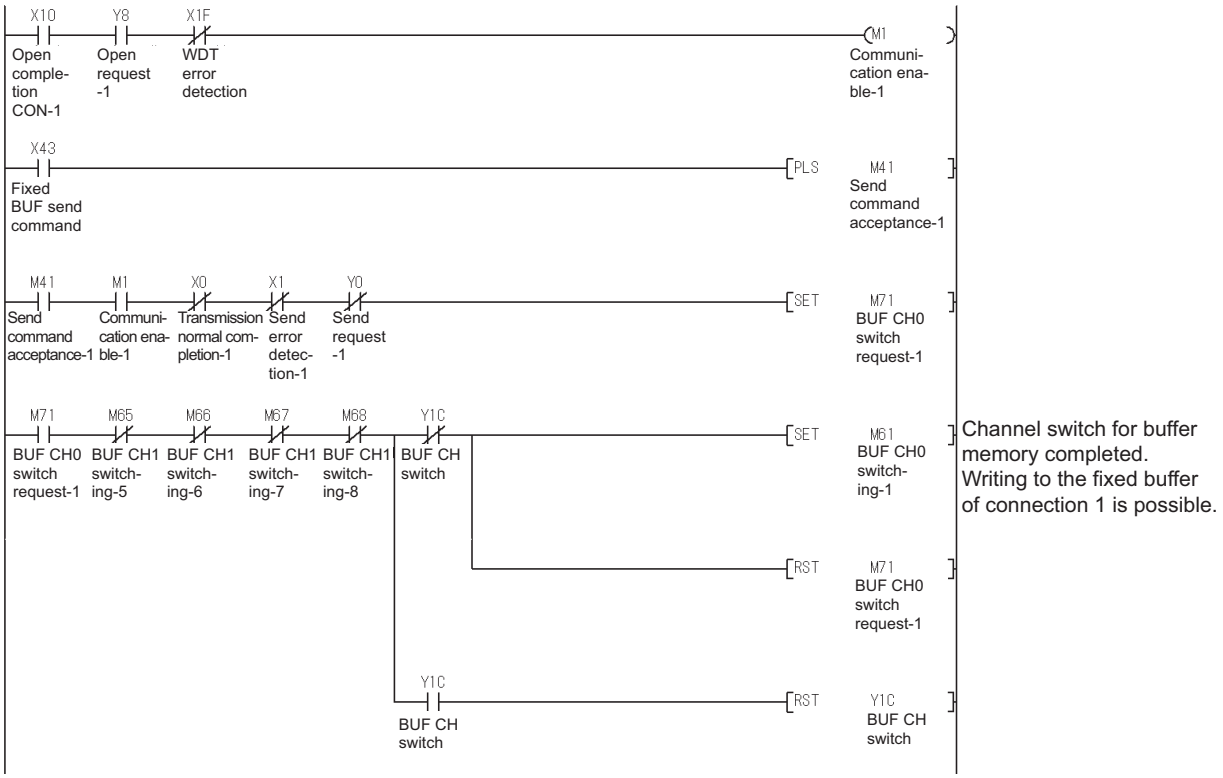
On the A/AnS series, the reception completion signal (X0) turns ON when data is received to the fixed buffer area.

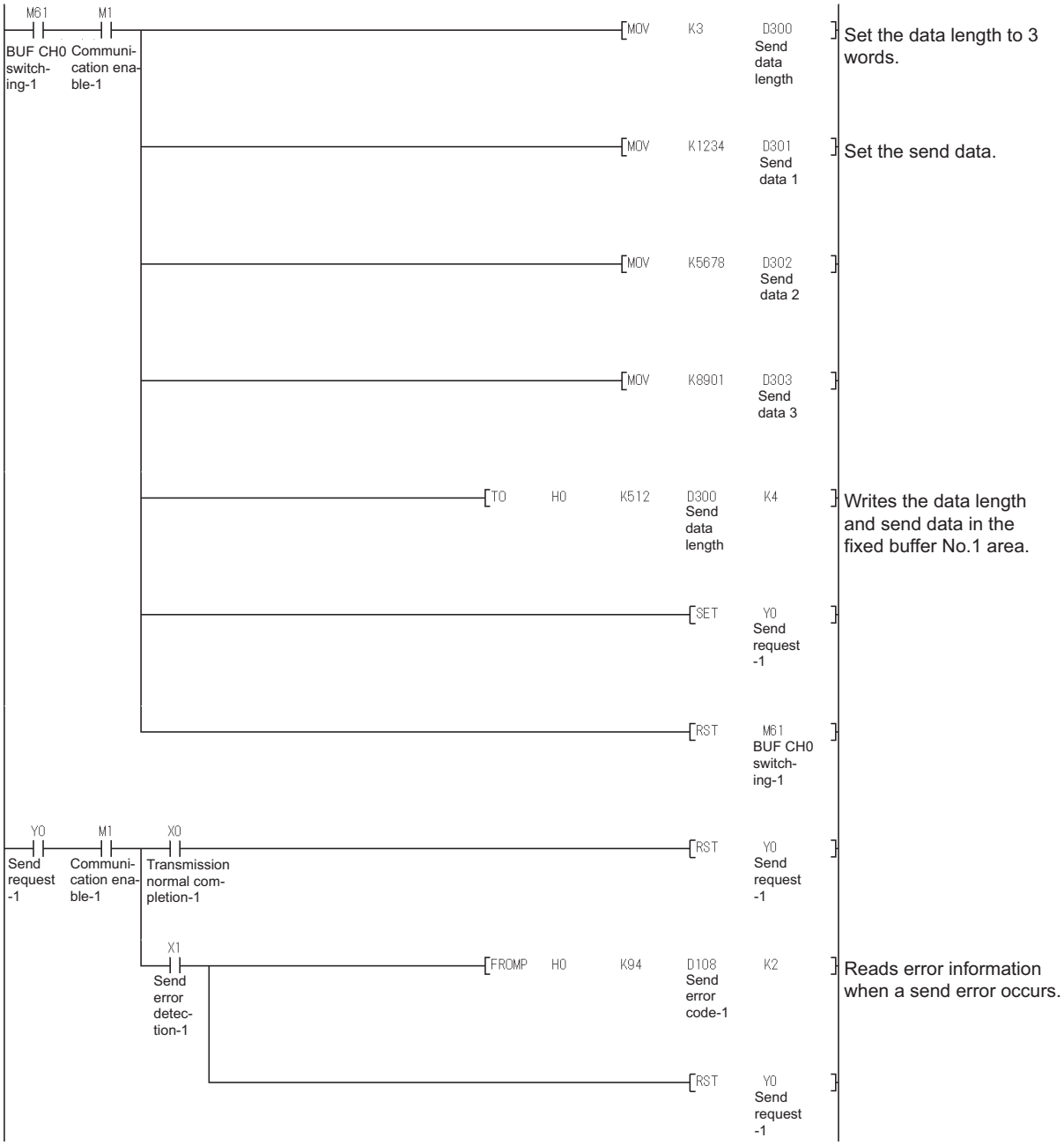
The A/AnS series performs data reception processing by reading received data from the fixed buffer area by the sequence program, and turning the reception completion confirmation signal (Y0) ON.

(a) Program conditions

The following shows a program example for performing transmission processing by fixed buffer No.1 when the fixed buffer transmission instruction (X43) is turned ON.

(b) Program example




M61
BUF CH0 switch-ing-1
M1
Communi-cation ena-ble-1
MOV K3 D300 Send data length
Set the data length to 3 words.
MOV K1234 D301 Send data 1
Set the send data.
MOV K5678 D302 Send data 2
MOV K8901 D303 Send data 3
TO H0 K512 D300 Send data length K4
Writes the data length and send data in the fixed buffer No.1 area.
SET Y0 Send request -1
RST M61 BUF CH0 switch-ing-1
Y0
Send request -1
M1
Communi-cation ena-ble-1
X0
Transmission normal com-pletion-1
RST Y0 Send request -1
X1
Send error detec-tion-1
FROMP H0 K94 D108 Send error code-1 K2
Reads error information when a send error occurs.
RST Y0 Send request -1

(2) Q series

[Transmission processing]

The Q series uses the dedicated instruction (BUFSND) to perform data transmission from the fixed buffer to an external device.

[Reception processing]

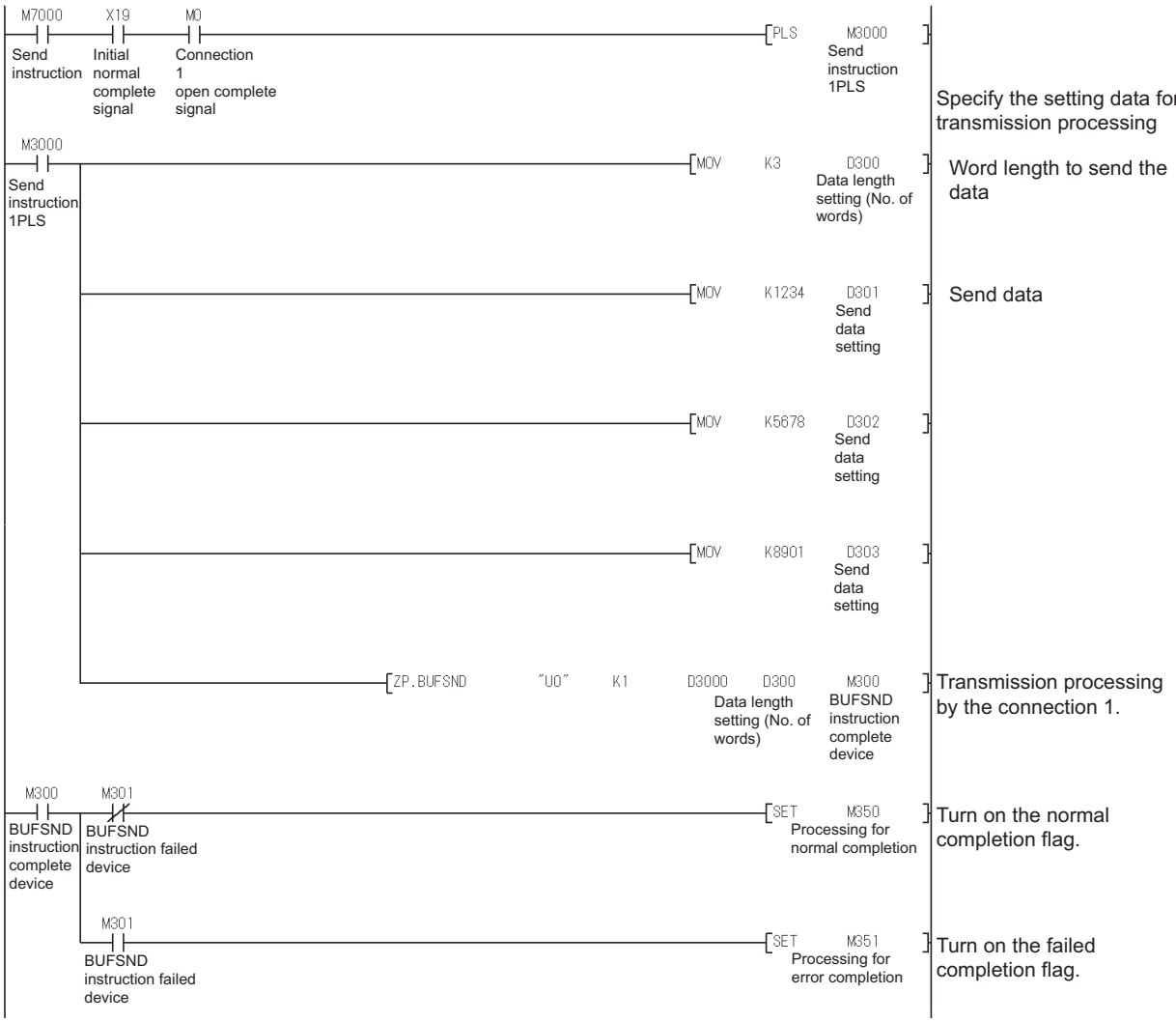
On the Q series, the fixed buffer reception status signal (corresponding bit of address 5005_H) in buffer memory turns ON when data is received to the fixed buffer area.

The Q series uses the dedicated instruction (BUFRCV) to perform data reception.

(a) Program condition

The following shows a program example for performing transmission processing by fixed buffer No.1 when the transmission instruction (M7000) is turned ON.

(b) Program example



4 INTELLIGENT COMMUNICATION MODULE REPLACEMENT

4.1 List of Intelligent Communication Modules to be Replaced

(1) Replacement of intelligent communication modules AD51H-S3/A1SD51S

A/AnS series module	Alternative model	Remarks
AD51H-S3	QD51	RS-232: 2ch, RS-422/485: none
A1SD51S	QD51-R24	RS-232: 1ch, RS-422/485: 1ch

Point

(1) The serial communication module (QJ71C24N(-R2/R4)) can be used, depending on applications. For details, refer to the TECHNICAL BULLETIN (FA-A-0059).

(2) Using the QA6□B as an extension base unit allows the AD51H-S3 to be used in the Q series system.
Using the QA1S6□B allows the A1SD51S to be used in the Q series system.

Note that the QA6□B and the QA1S6 B cannot be used for the universal model QCPU (soon will be supported).
If the QA6□B or the QA1S6□B is required, consider replacing with the High Performance model QCPU.
For replacement with the High Performance module QCPU, refer to "Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)".

Remarks

For how to replace the A1SD51S with the QD51(-R24), refer to Appendix 2.

(2) Replacement of intelligent communication module AD51-S3

A series module	Alternative model	Remarks
AD51-S3	QD51	RS-232: 2ch, RS-422/485: none
	QD51-R24	RS-232: 1ch, RS-422/485: 1ch

4.2 Performance Specifications Comparison

4.2.1 Module performance comparison

(1) Replacement of intelligent communication module AD51H-S3

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AD51H-S3	QD51 QD51-R24		
Programming language		AD51H-BASIC		○	
Number of tasks		8	2	×	Review the BASIC program, and reduce the number of tasks to two or less.
Task start conditions		• Start at power on • Start by interrupt from the programmamble controller CPU (This cannot be performed when Compiler BASIC is used.) • Start by start request from another task		○	
Internal memory	Program	384K bytes (16/32/48/64K bytes selectable for one task.)	Max. 64K bytes (16/32/48/64K bytes selectable for one task.)	×	Review the BASIC program, and reduce the memory size to 64K bytes or less.
	Common memory	8K bytes		○	
	Buffer memory	6K bytes		○	
	Extension relay (EM)	1024 points		○	
	Extension register (ED)	1024 points		○	
General input/output		Input: 27 points Output: 26 points (9 points: For task start from the PLC CPU.)	Input: 26 points Output: 23 points (2 points: For task start from the PLC CPU.)	×	Change I/O signals with a program.
Memory protection		Yes (Memory card write protectable)	Yes (Flash ROM write protectable)	○	
Interface	RS-232	2 channels	QD51: 2channels QD51-R24: 1 channel	△	The cable connector must be changed.
	RS-422/485	1 channel	QD51: - QD51-R24: 1 channel	△	Use the QD51-R24.
	Parallel	1 channel	-	×	Consider changing the external devices to RS-232/RS-422 interface devices.
	Memory card	2 slots	-	×	Use CPU module devices.
Clock function		None		○	
Power failure protection		None		○	
User program in ROM		Possible (64kWROM,128kWROM, 256kWROM)	Possible (Stored in the built-in Flash ROM)	○	
Console		• A7PHP • A7HGP • A7LMS • VG-620 • VT-382 • IBM-PC/AT-compatible personal computer	• IBM-PC/AT-compatible personal computer	△	Use an IBM-PC/AT-compatible personal computer. The AD51H-BASIC software package can be used with the QD51(-R24). (This package can be also used with the A series.)
Multitask debugging		Possible (when a debugger is used.)		○	
I/O points occupied		48 points (The first 16 points are open and the last 32 points are special.)	32 points	×	Change the start I/O No. in the PLC parameter I/O assignment setting.
No. of slots		2 slots	1 slot	×	

(2) Replacement of intelligent communication module A1SD51S

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		A1SD51S	QD51 QD51-R24		
Programming language		AD51H-BASIC (interpreter, compile)		○	
Number of tasks		2		○	
Task start conditions		• Start at power on • Start by interrupt from the programmamble controller CPU (This cannot be performed when Compiler BASIC is used.) • Start by start request from another task		○	
Internal memory	Program	Max. 64K bytes (16/32/48/64K bytes selectable for one task.)		×	Review the BASIC program, and reduce the memory size to 64K bytes or less.
	Common memory	8K bytes		○	
	Buffer memory	6K bytes		○	
	Extension relay (EM)	1024 points		○	
	Extension register (ED)	1024 points		○	
General input/output		Input: 27 points Output: 26 points (9 points: For task start from the PLC CPU.)	Input: 26 points Output: 23 points (2 points: For task start from the PLC CPU.)	×	Change I/O signals with a program.
Memory protection		Yes (E^2PROM write protectable)	Yes (Flash ROM write protectable)	○	
Interface	RS-232	2 channels	QD51: 2channels QD51-R24: 1 channel	△	The cable connector must be changed.
	RS-422/485	1 channel	QD51: - QD51-R24: 1 channel	△	Use the QD51-R24.
Clock function		None		○	
Power failure protection		Yes (common memory, extension relay, extension register)	None	○	Refer to Section 4.6.2 (4).
User program in ROM		Possible (Stored in the built-in EEP-ROM)	Possible (Stored in the built-in flash ROM)	○	
Console		• A7PHP • A7HGP • A7LMS • VG-620 • VT-382 • IBM-PC/AT-compatible personal computer	• IBM-PC/AT-compatible personal computer	△	Use an IBM-PC/AT-compatible personal computer. The AD51H-BASIC software package can be used with the QD51(-R24). (This package can be also used with the A series.)
Multitask debugging		Possible (when a debugger is used.)		○	
I/O points occupied		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: intelli 32 points)	○	
No. of slots		1 slot		○	

(3) Replacement of intelligent communication module AD51-S3

The BASIC program of AD51-S3 is incompatible with that of QD51/QD51-R24. Analyze the existing program to create a program with AD51H-BASIC.

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AD51-S3	QD51 QD51-R24		
Programming language		GPC-BASIC	AD51H-BASIC	×	Change the BASIC program to AD51H-BASIC.
Number of tasks		Max. 8	2	×	Review the BASIC program, and reduce the number of tasks to two or less.
Task start conditions		• Start at power on • Start by interrupt from the programmable controller CPU (Impossible when compiled BASIC is run.) • Start by a real time interrupt	• Start at power on • Start by interrupt from the programmamble controller CPU (This cannot be performed when Compiler BASIC is used.) • Start by start request from another task	△	When the task is started using a real time interrupt, the condition must be changed.
Internal memory	Program	Max. 64K bytes + 48K bytes (in ROM)	Max. 64K bytes (16/32/48/64K bytes selectable for one task.)	×	Review the BASIC program, and reduce the memory size to 64K bytes or less.
	Common memory	2K bytes	8K bytes	○	
	Buffer memory	6K bytes		○	
	Extension relay (EM)	-	1024 points	-	
	Extension register (ED)	-	1024 points	-	
General input/output		Input: 13 points Output: 10 points	Input: 26 points Output: 23 points	×	Change I/O signals with a program.
Interface	RS-232	2 channels (Channels 1 and 2)	QD51: 2channels (Channels 1 and 2) QD51-R24: 1 channel (Channel 1)	△	The cable connector must be changed.
	RS-422/485	2 channels (Channels 3 and 4)	QD51: - QD51-R24: 1 channel (Channel 2)	△	Use the QD51-R24.
Power failure protection		Yes	None	×	
User program in ROM		Possible (8K ROM/16K ROM)	Possible (Stored in the built-in flash ROM)	○	
Console		• A6GPP • A6PHP • VG-620/670 • • • Manufactured by Victor Data Systems	• IBM-PC/AT-compatible personal computer	△	Use an IBM-PC/AT-compatible personal computer. The software package for starting up the system, which was used on the AD51-S3, cannot be used. Use the AD51H-BASIC software package supporting the QD51 (-R24).
I/O points occupied		48 points	32 points	×	Change the start I/O No. in the PLC parameter I/O assignment setting.

4.2.2 Cable specifications comparison

(1) Replacement of intelligent communication modules AD51H-S3/A1SD51S

○: Compatible, △: Partial change required, ×: Incompatible

<table>
<tr><th colspan="2" rowspan="2">Item</th><th colspan="3">Specifications</th><th rowspan="2">Compat-ibility</th><th rowspan="2">Precautions for replacement</th></tr>
<tr><th>AD51H-S3</th><th>A1SD51S</th><th>QD51
QD51-R24</th></tr>
<tr><td rowspan="3">RS-232</td><td>Cable</td><td colspan="3">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="3">Max. 15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (module side of connection cable)</td><td>D-Sub 25P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>△</td><td>Change the connector.</td></tr>
<tr><td rowspan="3">RS-422/485</td><td>Cable</td><td colspan="3"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or more</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max. 500m</td><td>Max. 1200m</td><td>○</td><td></td></tr>
<tr><td>External wiring (module side of connection cable)</td><td colspan="2">D-Sub 25P
(male, screw type)</td><td>Terminal block</td><td>△</td><td>Change the connector.</td></tr>
</table>

*1 Recommended RS-232 and RS-422/485 cables are listed in the Q series intelligent communication module manual.

*2 Use an exclusive connector shell listed in the Q series intelligent communication module manual for the cable to be connected to a Q series intelligent communication module.

(2) Replacement of intelligent communication module AD51-S3

○: Compatible, △: Partial change required, ×: Incompatible

<table>
<tr><th colspan="2" rowspan="2">Item</th><th colspan="2">Specifications</th><th rowspan="2">Compat-ibility</th><th rowspan="2">Precautions for replacement</th></tr>
<tr><th>AD51-S3</th><th>QD51
QD51-R24</th></tr>
<tr><td rowspan="3">RS-232</td><td>Cable</td><td colspan="2">Use a cable that is compliant with the RS-232 standard.*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td colspan="2">Max. 15m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (module side of connection cable)</td><td>D-Sub 25P
(male, screw type)</td><td>D-Sub 9P*2
(male, screw type)</td><td>△</td><td>Change the connector.</td></tr>
<tr><td rowspan="3">RS-422/485</td><td>Cable</td><td colspan="2"><table><tr><th>Item</th><th>Description</th></tr><tr><td>Cable type</td><td>Shielded cable</td></tr><tr><td>Number of pairs</td><td>3</td></tr><tr><td>Conductor resistance (20℃)</td><td>88.0Ω/km or less</td></tr><tr><td>Insulation resistance</td><td>10000 MΩ-km or more</td></tr><tr><td>Dielectric withstand voltage</td><td>500 VDC for 1 minute</td></tr><tr><td>Electrostatic capacitance (1kHz)</td><td>Average 60nF/km or less</td></tr><tr><td>Characteristic impedance (100kHz)</td><td>110±10Ω</td></tr></table>*1</td><td>○</td><td></td></tr>
<tr><td>Cable length</td><td>Max. 500m</td><td>Max. 1200m</td><td>○</td><td></td></tr>
<tr><td>Applicable connector for external wiring (module side of connection cable)</td><td>Channel 1: D-Sub 25P
(male, screw type)
Channel 2: Terminal block</td><td>Terminal block</td><td>△</td><td>For replacement on channel 1, the connector must be changed.</td></tr>
</table>

*1 Recommended RS-232 and RS-422/485 cables are listed in the Q series intelligent communication module manual.

*2 Use an exclusive connector shell listed in the Q series intelligent communication module manual for the cable to be connected to a Q series intelligent communication module.

4.3 Function Comparison

(1) Replacement of intelligent communication modules AD51H-S3/A1SD51S

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AD51H-S3 A1SD51S	QD51 QD51-R24		
Functions by BASIC programs	Sub-CPU Function	Complex numerical and functional calculations which would lengthen the programmable controller CPU's scan time can be done by a BASIC program. • Collection, analysis and correction of measurement data • Function calculations such as Sin, Log and square roots, etc.		○	
	Monitor Display Function	This displays the operating status (production conditions, running status, breakdown etc.) on a console or terminal connected to the module.		○	
	Key Input Function	This allows input of production schedules, production quantity, operations, setting data, etc. from the keyboard of a console or terminal connected to the module.		○	
	Printer Function	This prints out production plans, results, daily reports, breakdown, planning data, inspection results, test results charts, etc. with a printer connected to the module.		○	
	Data Input Function	This enables input of data from a bar code reader, a magnetic card reader, etc. that is connected to the module.(Since transmission is available in a free format through a BASIC program, it will suit any protocol of the opposite device.) • Input of production lot No., product name, quantity, etc. • Collection of measured values, test data		○	
	External Device Connection Function	This allows connection to a computer to the RS-232C or RS-422/485 interface and sends and receives data through a BASIC program.		○	
	Clock Function	This writes and reads clock data (year, month, day, hour, minute, second, day of week) of a programmable controller CPU with the clock function.		○	
Online Programming Function		This creates, executes and corrects BASIC programs through system commands by connecting a console to the module. It also writes and reads execution programs to a Flash ROM by system commands.		○	
Multitask Debugging Function		This multitask function allows debugging while running BASIC programs by connecting a console and a debugger to the module.		○	

(2) Replacement of intelligent communication module AD51-S3

○: Compatible, △: Partial change required, ×: Incompatible

Item		Specifications		Compat-ibility	Precautions for replacement
		AD51-S3	QD51 QD51-R24		
Functions by BASIC programs	Sub-CPU Function	Complex numerical and functional calculations which would lengthen the programmable controller CPU's scan time can be done by a BASIC program. • Collection, analysis and correction of measurement data • Function calculations such as Sin, Log and square roots, etc.		○	The BASIC program of the AD51-S3 is incompatible with that of the QD51/QD51-R24. Analyze the existing program to create a program with AD51H-BASIC.
	Monitor Display Function	This displays the operating status (production conditions, running status, breakdown, etc.) on a console or terminal connected to the module.		○	
	Key Input Function	This allows input of production schedules, production quantity, operations, setting data, etc. from the keyboard of a console or terminal connected to the module.		○	
	Printer Function	This prints out production plans, results, daily reports, breakdown, planning data, inspection results, test results charts, etc. with a printer connected to the module.		○	
	Data Input Function	This enables input of data from a bar code reader, a magnetic card reader, etc. that is connected to the module. (Since transmission is available in a free format through a BASIC program, it will suit any protocol of the opposite device.) • Input of production lot No., product name, quantity, etc. • Collection of measured values, test data		○	
	External Device Connection Function	This allows connection to a computer to the RS-232C or RS-422/485 interface and sends and receives data through a BASIC program.		○	
	Clock Function	This writes and reads clock data (year, month, day, hour, minute, second, day of week)of a programmable controller CPU with the clock function.		○	
Online Programming Function		This creates, executes and corrects BASIC programs through system commands by connecting a console to the module. It also writes and reads execution programs to a Flash ROM by system commands.		○	
Multitask Debugging Function		-	This multitask function allows debugging while running BASIC programs by connecting a console and a debugger to the module.	-	

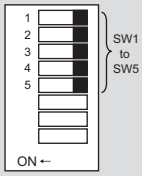
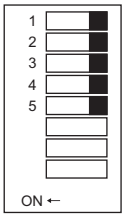
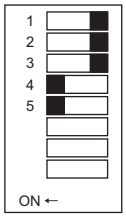
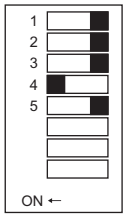
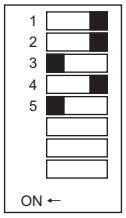
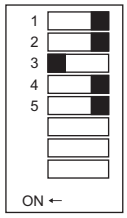
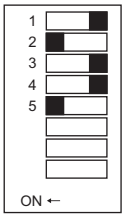
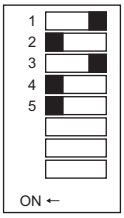
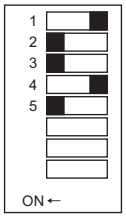
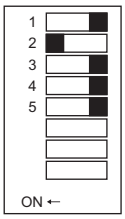
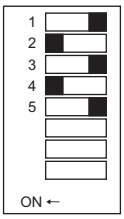
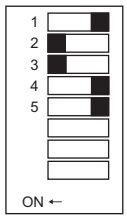
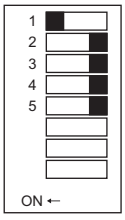
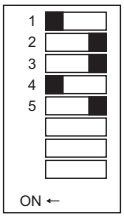
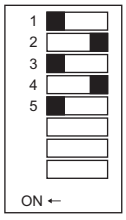
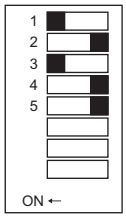
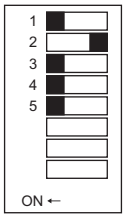
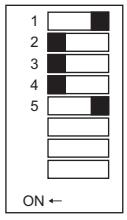
4.4 Switch Setting

(1) Replacement of intelligent communication module AD51H-S3

○: Compatible, △: Partial change required, ×: Incompatible

<table>
<tr><th colspan="3" rowspan="2">Switch name</th><th colspan="2">Specifications</th><th rowspan="2">Compat-ibility</th><th rowspan="2">Precautions for replacement</th></tr>
<tr><th>AD51H-S3</th><th>QD51
QD51-R24</th></tr>
<tr><td colspan="3">Mode setting switch 1</td><td>0 or 1: Execution mode
2 or 3: Multitask debugging mode
4: Programming
5 to F: Unusable</td><td rowspan="4">-</td><td rowspan="4">△</td><td rowspan="4">Set the switches in the GX Developer's PLC parameter settings.</td></tr>
<tr><td rowspan="3">Mode setting switch 2</td><td>SW1
to
SW5</td><td>Console or debug port setting</td><td>Set by the combination of devices to be used as a console and a debugger.*1</td></tr>
<tr><td>SW6</td><td>BASIC program operation stop by [BREAK]/[Ctrl] + [C] keys.</td><td>OFF: Disabled
ON: Enabled</td></tr>
<tr><td>SW7</td><td>Boot target of execution program</td><td>OFF: Memory card priority
ON: EP-ROM priority</td><td>-</td><td>-</td><td>Execution programs are stored in a flash ROM.</td></tr>
<tr><td rowspan="10">Switch 2</td><td>SW8</td><td>Scheduled time of task</td><td>OFF: 50ms
ON: 100ms</td><td>-</td><td>-</td><td>The scheduled time of task must be fixed to 50ms.</td></tr>
<tr><td>SW1</td><td>Operation of the AD51H when resetting a programmable controller CPU</td><td>OFF: Reset signal invalid
ON: Reset signal valid</td><td>-</td><td>-</td><td>The reset signal of programmable controller CPU is valid.</td></tr>
<tr><td>SW2</td><td rowspan="2">Time accessible by FROM/TO instructions from a programmable controller CPU when resetting the AD51H</td><td rowspan="2"><table><tr><th>SW2</th><th>SW3</th><th>Accessible time</th></tr><tr><td>OFF</td><td>OFF</td><td>200 ms</td></tr><tr><td>OFF</td><td>ON</td><td>500 ms</td></tr><tr><td>ON</td><td>OFF</td><td>1000 ms</td></tr><tr><td>ON</td><td>ON</td><td>2000 ms</td></tr></table></td><td rowspan="2">-</td><td rowspan="2">△</td><td rowspan="2">Set the switches in the GX Developer's PLC parameter settings.
(Select 200ms or 2000ms.)</td></tr>
<tr><td>SW3</td></tr>
<tr><td>SW4</td><td>-</td><td>Fixed to OFF</td><td>-</td><td>-</td><td></td></tr>
<tr><td>SW5</td><td>-</td><td>Fixed to OFF</td><td>-</td><td>-</td><td></td></tr>
<tr><td>SW6</td><td>EP-ROM type to be used</td><td>OFF: 64kROM/128kROM
ON: 256kROM</td><td>-</td><td>-</td><td>No EP-ROM</td></tr>
<tr><td>SW7</td><td rowspan="2">Terminal resistor setting</td><td rowspan="2">SW7 and SW8 are both OFF: Without terminal resistor
SW7 and SW8 are both ON: With terminal resistor</td><td rowspan="2">-</td><td rowspan="2">△</td><td rowspan="2">Connect the included terminal resistor.</td></tr>
<tr><td>SW8</td></tr>
<tr><td rowspan="8">Memory-protect range switch</td><td>SW1</td><td>Memory-protect range 0 to 0FFFFh</td><td rowspan="8">OFF: Not protected
ON: Protected</td><td rowspan="8">-</td><td rowspan="8">△</td><td rowspan="8">The write protect setting of a flash ROM is available.
Set the switches in the GX Developer's PLC parameter settings.</td></tr>
<tr><td>SW2</td><td>10000 to 1FFFFh</td></tr>
<tr><td>SW3</td><td>20000 to 2FFFFh</td></tr>
<tr><td>SW4</td><td>30000 to 3FFFFh</td></tr>
<tr><td>SW5</td><td>40000 to 4FFFFh</td></tr>
<tr><td>SW6</td><td>50000 to 5FFFFh</td></tr>
<tr><td>SW7</td><td>60000 to 6FFFFh</td></tr>
<tr><td>SW8</td><td>70000 to 7FFFFh</td></tr>
</table>

*1 The next page shows the settings of mode setting switch 2 that vary by the combination of devices to be used as consoles and debuggers.

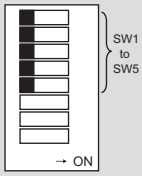
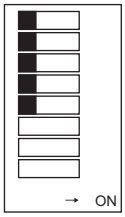
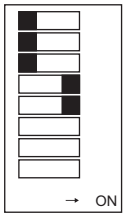
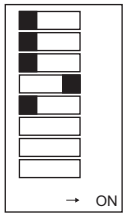
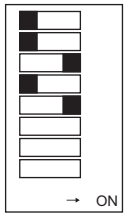
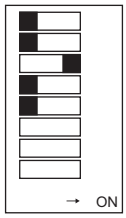
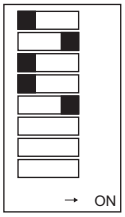
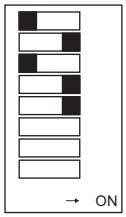
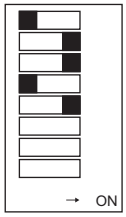
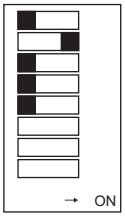
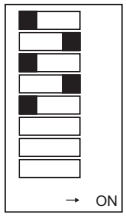
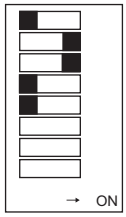
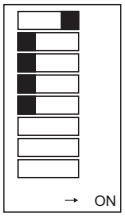
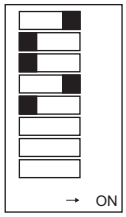
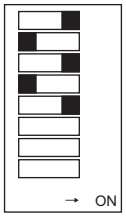
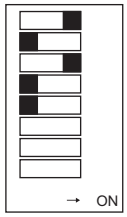
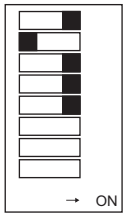
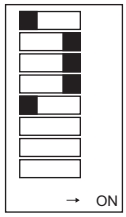
Mode Setting Switch	Console	Debugger					
			RS-422 (CH3)	RS-232C (CH1)		RS-232C (CH2)	
		None	A7PHP/ A7HGP/ A7LMS/ IBM-PC/AT-compatible	VT-382/ IBM-PC/AT-compatible	VG-620	VT-382/ IBM-PC/AT-compatible	VG-620
Mode setting switch 2  Set each switch to the ■ side.	A7PHP A7HGP A7LMS IBM-PC/AT-compatible series (Connected to CH3)		-				
	VT-382 IBM-PC/AT-compatible series (Connected to CH1)			-	-		-
	VG-620 (Connected to CH1)			-	-	-	
	None						

(2) Replacement of intelligent communication module A1SD51S

○: Compatible, △: Partial change required, ×: Incompatible

Switch name			Specifications		Compat-ibility	Precautions for replacement
			A1SD51S	QD51 QD51-R24		
Mode setting switch 1			0 or 1: Execution mode 2 or 3: Multitask debugging mode 4: Programming 5 to F: Unusable	-	△	Set the switches in the GX Developer's PLC parameter settings.
Mode setting switch 2	SW1 to SW5	Console or debug port setting	Set by the combination of devices to be used as a console and a debugger.*1			
	SW6	BASIC program operation stop by [BREAK]/[Ctrl] + [C] keys.	OFF: Disabled ON: Enabled			
	SW7	Operation of the A1SD51S when the programmable controller CPU is reset	Set the reset signal from the programmable controller CPU to valid or invalid. OFF: Reset signal invalid ON: Reset signal valid	-	-	There is no setting of valid or invalid. The reset signal of the programmable controller CPU is valid.
	SW8	The time for how long the programmable controller CPU can access to the A1SD51S using the FROM/TO instructions after the A1SD51S is reset	OFF: 200ms ON: 2000ms	-	△	Set the switches in the GX Developer's PLC parameter settings. (Select 200ms or 2000ms.)
	SW9	Backup area clear setting	OFF: Clear disabled ON: Clear enabled	-	×	Common memory is not backed up by a battery. To save data, use the file register or latch device of the programmable controller CPU.
	SW10	E^2PROM write protect setting	OFF: Write protection OFF ON: Write protection ON	-	△	Write protect can be set for a flash ROM. Set the switches in the GX Developer's PLC parameter settings.
	SW11	(Not used)	-	-	-	
	SW12		-	-	-	

*1 The next page shows the settings of mode setting switch 2 that vary by the combination of devices to be used as consoles and debuggers.

Mode Setting Switch	Console	Debugger					
		None	RS-422 (CH3)	RS-232C (CH1)		RS-232C (CH2)	
			A7PHP/ A7HGP/ A7LMS/ IBM-PC/AT-compatible	VT-382/ IBM-PC/AT-compatible	VG-620	VT-382/ IBM-PC/AT-compatible	VG-620
Mode setting switch 2  Set each switch to the ■ side.	A7PHP A7HGP A7LMS IBM-PC/AT-compatible series (Connected to CH3)		-				
	VT-382 IBM-PC/AT-compatible series (Connected to CH1)			-	-		-
	VG-620 (Connected to CH1)			-	-	-	
	None						

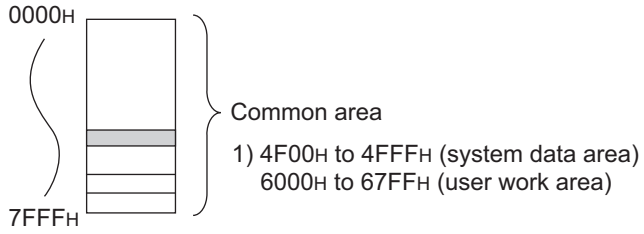
(3) Replacement of intelligent communication module AD51-S3

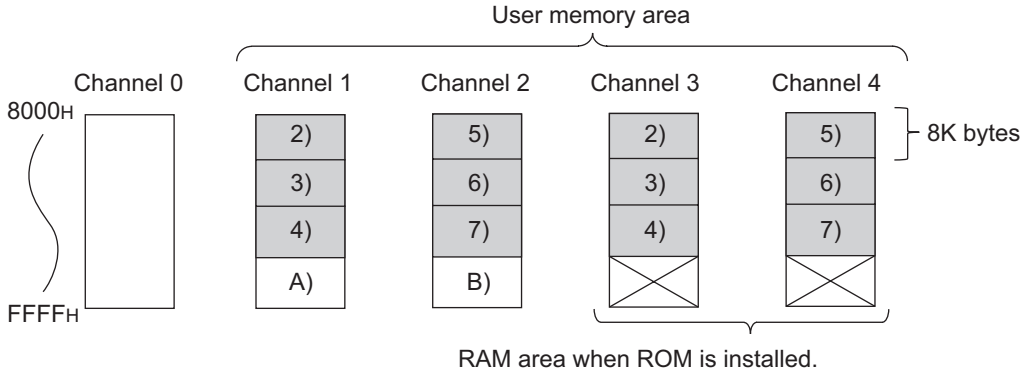
○: Compatible, △: Partial change required, ×: Incompatible

<table>
<tr><th colspan="3" rowspan="2">Switch name</th><th colspan="2">Specifications</th><th rowspan="2">Compat-ibility</th><th rowspan="2">Precautions for replacement</th></tr>
<tr><th>AD51-S3</th><th>QD51
QD51-R24</th></tr>
<tr><td rowspan="20">DIP switch</td><td>SW1</td><td rowspan="7">Memory protect range</td><td rowspan="7">48K bytes of the RAM area may be used for memory protect setting in units of 8K bytes.
The system data area may also be used for the setting.*1</td><td rowspan="7">-</td><td rowspan="7">△</td><td rowspan="7">The write protect setting of a flash ROM is available.
Set the switches in the GX Developer's PLC parameter settings.</td></tr>
<tr><td>SW2</td></tr>
<tr><td>SW3</td></tr>
<tr><td>SW4</td></tr>
<tr><td>SW5</td></tr>
<tr><td>SW6</td></tr>
<tr><td>SW7</td></tr>
<tr><td>SW8</td><td rowspan="6">-</td><td rowspan="6">Fixed to OFF</td><td rowspan="6">-</td><td rowspan="6">-</td><td rowspan="6"></td></tr>
<tr><td>SW9</td></tr>
<tr><td>SW10</td></tr>
<tr><td>SW11</td></tr>
<tr><td>SW12</td></tr>
<tr><td>SW13</td></tr>
<tr><td>SW14</td><td rowspan="2">Terminal resistor</td><td rowspan="2">SW14 and SW15 are both OFF: Without terminal resistor
SW14 and SW15 are both ON: With terminal resistor</td><td rowspan="2">-</td><td rowspan="2">△</td><td rowspan="2">Connect the included terminal resistor.</td></tr>
<tr><td>SW15</td></tr>
<tr><td>SW16</td><td>Console channel</td><td>
<table>
<tr><th>SW16 Position</th><th>CHI (RS-422)</th><th>CH3 (RS-232C)</th></tr>
<tr><td>ON</td><td>GPP/HGP/PHP</td><td>General port</td></tr>
<tr><td>OFF</td><td>General port</td><td>VG-670/A6GPP</td></tr>
</table>
</td><td>-</td><td>△</td><td>Set the switches in the GX Developer's PLC parameter settings.</td></tr>
<tr><td>SW17</td><td>System data transfer</td><td>
<table>
<tr><th>SW17 Position</th><th>8000H to 8004H Data</th><th>Description</th></tr>
<tr><td rowspan="2">ON</td><td>Specific pattern</td><td>System data is transferred from channel 1 addresses 8000H to 80FFH to system data area,4F00H to 4FFFH.</td></tr>
<tr><td>Unspecific pattern</td><td>Not transferred.</td></tr>
<tr><td rowspan="2">OFF</td><td>Specific pattern</td><td>Not transferred.</td></tr>
<tr><td>Unspecific pattern</td><td>Not transferred.</td></tr>
</table>
</td><td>-</td><td>-</td><td>For AD51H-BASIC, the system data is not needed.</td></tr>
<tr><td>SW18</td><td>-</td><td colspan="3">Fixed to OFF</td><td>-</td><td>-</td><td></td></tr>
</table>

*1 Memory protect area

The shaded areas ▭ in the memory maps below can be memory-protected.





Remarks

(1) The memory protect DIP switch number is shown as 1) to 7) in the above memory map.

(2) The memory protect DIP switch numbers for a given RAM address range remain unchanged when ROM is loaded although the channel number has changed from channel 1 to 2 or from 3 to 4.

4.5 Program Comparison

4.5.1 I/O signal

(1) Replacement of intelligent communication module AD51H-S3

○: Compatible, △: Partial change required, ×: Incompatible

Input signal	AD51H-S3	QD51 QD51-R24	Compat-ibility	Precautions for replacement
X0	Use prohibited	General input	△	Change "X10 to X1D" to "X0 to XD", and "X20 to X2F" to "X10 to X1D".
X1			△	
X2			△	
X3			△	
X4			△	
X5			△	
X6			△	
X7			△	
X8			△	
X9			△	
XA			△	
XB		Multitask execution start	△	
XC		Multitask stop	△	
XD		QD51 (-R24) system down	△	
XE		QD51 (-R24) operating status	△	
XF		Use prohibited	△	
X10	General input	General input	△	
X11			△	
X12			△	
X13			△	
X14			△	
X15			△	
X16			△	
X17			△	
X18			△	
X19			△	
X1A			△	
X1B	Multitask execution start		△	
X1C	Multitask stop		△	
X1D	AD51H system down		△	
X1E	Use prohibited		△	
X1F		Use prohibited	△	
X20 to X2F	General input	Outside I/O point range	△	

○: Compatible, △: Partial change required, ×: Incompatible

Output signal	AD51H-S3	QD51 QD51-R24	Compat-ibility	Precautions for replacement
Y0	Unused (Can be used for internal relay (M).)	General output	△	Change "Y10 to Y20" to "Y0 to Y10" and "Y13 to Y18". In addition, change "Y21 to Y28" to "Y11 to Y12" with the task divided into two.
Y1			△	
Y2			△	
Y3			△	
Y4			△	
Y5			△	
Y6			△	
Y7			△	
Y8			△	
Y9			△	
YA			△	
YB			△	
YC			△	
YD			△	
YE			△	
YF			△	
Y10	General output		△	
Y11		General output/Start BASIC task No.1 designation	△	
Y12		General output/Start BASIC task No.2 designation	△	
Y13		General output	△	
Y14			△	
Y15			△	
Y16			△	
Y17			△	
Y18			△	
Y19		Task start signal	△	
Y1A		Reset request signal	△	
Y1B		Use prohibited	△	
Y1C			△	
Y1D			△	
Y1E			△	
Y1F			△	
Y20		Outside I/O point range	△	
Y21	General output/Start BASIC task No. designation		△	
Y22			△	
Y23			△	
Y24			△	
Y25			△	
Y26			△	
Y27			△	
Y28			△	
Y29	Program start signal		△	
Y2A to Y2F	Use prohibited		△	

(2) Replacement of intelligent communication module A1SD51S

○: Compatible, △: Partial change required, ×: Incompatible

Input signal	A1SD51S	QD51 QD51-R24	Compat-ibility	Precautions for replacement
X0	General input	General input	○	-
X1			○	
X2			○	
X3			○	
X4			○	
X5			○	
X6			○	
X7			○	
X8			○	
X9			○	
XA			○	
XB	Multitask execution start	Multitask execution start	○	
XC	Multitask stop	Multitask stop	○	
XD	A1SD51S system down	QD51 (-R24) system down	○	
XE	Use prohibited	QD51 (-R24) operating status	○	
XF		Use prohibited	○	
X10	General input	General input	○	
X11			○	
X12			○	
X13			○	
X14			○	
X15			○	
X16			○	
X17			○	
X18			○	
X19			○	
X1A			○	
X1B			○	
X1C			○	
X1D			○	
X1E			○	
X1F		Use prohibited	×	

○: Compatible, △: Partial change required, ×: Incompatible

Output signal	A1SD51S	QD51 QD51-R24	Compat-ibility	Precautions for replacement
Y0	General output	General output	○	-
Y1			○	
Y2			○	
Y3			○	
Y4			○	
Y5			○	
Y6			○	
Y7			○	
Y8			○	
Y9			○	
YA			○	
YB			○	
YC			○	
YD			○	
YE			○	
YF			○	
Y10			○	
Y11	General output/Start BASIC task No.1 designation	General output/Start BASIC task No.1 designation	○	
Y12	General output/Start BASIC task No.2 designation	General output/Start BASIC task No.2 designation	○	
Y13	General output	General output	○	
Y14			○	
Y15			○	
Y16			○	
Y17			○	
Y18			○	
Y19	Task start signal	Task start signal	○	
Y1A	Reset request signal	Reset request signal	○	
Y1B	Use prohibited	Use prohibited	○	
Y1C			○	
Y1D			○	
Y1E			○	
Y1F			○	

(3) Replacement of intelligent communication module AD51-S3

○: Compatible, △: Partial change required, ×: Incompatible

Input signal	AD51H-S3	QD51 QD51-R24	Compat-ibility	Precautions for replacement
X0	Use prohibited	General input	△	
X1			△	
X2			△	
X3			△	
X4			△	
X5			△	
X6			△	
X7			△	
X8			△	
X9			△	
XA			△	
XB		Multitask execution start	△	
XC		Multitask stop	△	
XD		QD51 (-R24) system down	△	
XE		QD51 (-R24) operating status	△	
XF		Use prohibited	△	
X10	General input	General input	△	Change "X10 to X1C" to "X0 to XA", and "X10 to X1F". Also, change X1D to XD.
X11			△	
X12			△	
X13			△	
X14			△	
X15			△	
X16			△	
X17			△	
X18			△	
X19			△	
X1A			△	
X1B			△	
X1C			△	
X1D	AD51-S3 system down		△	
X1E	Use prohibited		△	
X1F		Use prohibited	△	
X20 to X2F		Outside I/O point range	△	

○: Compatible, △: Partial change required, ×: Incompatible

Output signal	AD51-S3	QD51 QD51-R24	Compat-ibility	Precautions for replacement
Y0	Unused (Can be used for internal relay (M).)	General output	△	Change "Y20 to Y29" to "Y0 to Y1F". However, when Y29 is used as an interrupt signal, the program must be reviewed.
Y1			△	
Y2			△	
Y3			△	
Y4			△	
Y5			△	
Y6			△	
Y7			△	
Y8			△	
Y9			△	
YA			△	
YB			△	
YC			△	
YD			△	
YE			△	
YF			△	
Y10			△	
Y11		General output/Start BASIC task No.1 designation	△	
Y12		General output/Start BASIC task No.2 designation	△	
Y13		General output	△	
Y14			△	
Y15			△	
Y16			△	
Y17			△	
Y18			△	
Y19		Task start signal	△	
Y1A		Reset request signal	△	
Y1B		Use prohibited	△	
Y1C			△	
Y1D			△	
Y1E			△	
Y1F			△	
Y20	General output	Outside I/O point range	△	
Y21			△	
Y22			△	
Y23			△	
Y24			△	
Y25			△	
Y26			△	
Y27			△	
Y28			△	
Y29	Turning this ON by sequence program interrupts the AD51 operation.		△	
Y2A	Use prohibited		△	
to			△	
Y2F			△	

4.5.2 Buffer memory

(1) Replacement of intelligent communication modules AD51H-S3/A1SD51S

There is no difference between the QD51(-R24) and the AD51H-S3/A1SD51S.

(2) Replacement of intelligent communication module AD51-S3

No difference is identified between the QD51(-R24) and the AD51-S3.

4.6 Reuse of Existing Programs

4.6.1 Replacement of intelligent communication module AD51H-S3

(1) Usable channels

Usable channels are as shown below.

○: Usable, ×: Unusable.

Item		AD51H-S3	QD51	QD51-R24
Channel	CH. 1 (RS-232)	○	○	○
	CH. 2 (RS-232)	○	○	×
	CH. 3 (RS-422/RS-485)	○	×	○
	CH. 4 (Parallel)	○	×	×

(a) Use in the QD51

Since the QD51 does not have CH. 3 (RS-422/485) and CH. 4 (Parallel) interfaces, using existing programs is not allowed.
Modify the BASIC program for CH. 3 (RS-422/485) to the other channels or use the QD51-R24.
CH. 4 (Parallel) is not provided.

(b) Use in the QD51-R24

Since the QD51-R24 does not have CH. 2 (RS-232) and CH. 4 (Parallel) interfaces is not allowed.
Modify the BASIC program for CH. 2.(RS-232) to the other channels or use the QD51.
CH. 4 (Parallel) is not provided.

(2) Communications specifications

Data bit and stop bit settings differ between the models. Correct the BASIC program.

Item	AD51H-S3	QD51(-R24)
Data bit	5, 6, 7, 8	7, 8
Stop bit	1, 1.5, 2	1, 2

(3) Common memory backup

Common memory backup is as shown below.

Item	AD51H-S3	QD51(-R24)
Common memory	Backed up	Not backed up

In the QD51 (-R24), common memory is not backed up by a battery. If backup is necessary, use the programmable controller CPU's file register (R).
Modify the program that accesses the common memory using GETMEM and PUTMEM instructions to access the file register (R) using PCRD and PCWT instructions.

(4) Maximum number of tasks

The maximum number of tasks that can be run at the same time is as shown below.

Item	AD51H-S3	QD51(-R24)
Max. number of tasks	8	2

In the QD51 (-R24), a maximum of only 2 BASIC programs can be run at a time.

(5) PCRD/PCWT command

The processing codes shown below are not executable for the Q/QnA CPUs. Replace any codes which can be replaced.

(a) PCRD commands

Processing codes used in the AD51H-S3		Processing codes used in the QD51(-R24)	
Processing Code	Contents	Processing Code	Contents
2(&H2)	Monitoring of the devices registered by the PCWT command	515 (&H203)	Reading of Q/QnA series device memory
4(&H4)	Reading of extension file register data		
5(&H5)	Monitoring the extension file register registered by the PCWT command		
7(&H7)	Reading of continuous address designation data in the extension file register		
8(&H8)	Reading of sequence programs	-	Cannot be replaced with Q/QnA series.
9(&H9)	Reading of microcomputer programs		
10(&HA)	Reading of comment data		
11(&HB)	Reading of extension comment data		
12(&HC)	Reading of the buffer memories of a special function module	533 (&H215)	Reading of the buffer memories of a Q/QnA series intelligent function module
13(&HD)	Reading of the model name of a programmable controller CPU	513 (&H201)	Reading of the model name of a Q/QnA programmable controller CPU
14(&HE)	Reading of parameter data (Reading of MELSECNET/10 parameters)	-	Cannot be replaced with Q/QnA series.
21(&H15)	Reading of network information		
22(&H16)	Reading of routing parameters		

(b) PCWT command

Processing codes used in the AD51H-S3		Processing codes used in the QD51(-R24)	
Processing Code	Contents	Processing Code	Contents
2(&H2)	Device memory monitor registration	515 (&H203)	Writing of Q/QnA series device memory
3(&H3)	Random writing to device memory		
4(&H4)	Writing to extension file register		
5(&H5)	Expansion file register monitor registration		
6(&H6)	Random writing to extension file register		
7(&H7)	Continuous address designation data writing to extension file register		
8(&H8)	Writing of sequence programs	-	Cannot be replaced with Q/QnA series.
9(&H9)	Writing of microcomputer programs		
10(&HA)	Writing of comment data		
11(&HB)	Writing of extension comment data		
12(&HC)	Writing of the buffer memories of a special function module	533 (&H215)	Writing to the buffer memories of a Q/QnA series intelligent function module
14(&HE)	Writing of parameter data (Writing of MELSECNET/10 parameters)	-	Cannot be replaced with Q/QnA series.
15(&HF)	Analysis of parameter data		

4.6.2 Replacement of intelligent communication module A1SD51S

(1) Usable channels

Usable channels are as shown below.

○: Usable, ×: Unusable.

Item	A1SD51S	QD51	QD51-R24
CH. 1 (RS-232)	○	○	○
CH. 2 (RS-232)	○	○	×
CH. 3 (RS-422/RS-485)	○	×	○

(a) Use in the QD51

When the A1SD51S is replaced with the QD51, CH.3 (RS-422/485) interface is not available.
Modify the BASIC program so that other channels may be used, or use the QD51-R24.

(b) Use in the QD51-R24

Since the QD51-R24 does not have CH. 2 (RS-232) and CH. 4 (Parallel) interfaces is not allowed.
When the A1SD51S is replaced with the QD51-R24, CH.2 (RS-232) interface cannot be used.
Modify the BASIC program so that other channels may be used, or use the QD51.

(2) Communications specifications

Data bit and stop bit settings differ between the models. Correct the BASIC program.

Item	A1SD51S	QD51(-R24)
Data bit	5, 6, 7, 8	7, 8
Stop bit	1, 1.5, 2	1, 2

(3) Common memory backup

Common memory backup is as shown below.

Item	A1SD51S	QD51(-R24)
Common memory	Backed up	Not backed up

In the QD51 (-R24), common memory is not backed up by a battery. If backup is necessary, use the programmable controller CPU's file register (R).
Modify the program that accesses the common memory using GETMEM and PUTMEM instructions to access the file register (R) using PCRD and PCWT instructions.

(4) Internal memory

(a) Memory to store a program to be executed

There is no difference between the QD51(-R24) and the A1SD51S.

(b) Communication memory

The communication memory for the A1SD51S can be accessed using only the special variable B@/W@. However, the communication memory for the QD51(-R24) can be also accessed using a sequence program (FROM/TO instructions). (The function was added.)
There is no precaution for when using an A1SD51S program for the QD51(-R24).

• Communication memory of the A1SD51S

Item	Description	Address		
		Programmable controller CPU	BASIC program	
		FROM/TO instruction	GETMEM/PUTMEM instruction	Special variableB@/W@
Communication with a programmable controller CPU	Buffer memory	0000_H to $0BFF_H$	0000_H to $17FF_H$	-
Communication between tasks	Common memory	-	1800_H to $37FF_H$	-
Reading/writing of the ON/OFF data	Extension registers	-	-	ED0000 to ED1023
	System area	-	-	-
	Extension relays	-	-	EM0000 to EM1023
	System area	-	-	-
	Special registers	-	-	ED9000 to ED9127
	System area	-	-	-
	Special relays	-	-	EM9000 to EM9127
	System area	-	-	-

• Communication memory of the QD51(-R24)

Item	Description	Address		
		Programmable controller CPU	BASIC program	
		FROM/TO instruction	GETMEM/PUTMEM instruction	Special variableB@/W@
Communication with a programmable controller CPU	Buffer memory	0000_H to $0BFF_H$	0000_H to $17FF_H$	-
Communication between tasks	Common memory	$0C00_H$ to $1BFF_H$	1800_H to $37FF_H$	-
Reading/writing of the ON/OFF data	Extension registers	$1C00_H$ to $1FFF_H$	-	ED0000 to ED1023
	System area	-	-	-
	Extension relays	2380_H to $23BF_H$	-	EM0000 to EM1023
	System area	-	-	-
	Special registers	2400_H to $247F_H$	-	ED9000 to ED9127
	System area	-	-	-
	Special relays	2500_H to 2507_H	-	EM9000 to EM9127
	System area	-	-	-

(c) PCRD commands

Processing codes used in the AD51H-S3		Processing codes used in the QD51(-R24)	
Processing Code	Contents	Processing Code	Contents
2(&H2)	Monitoring of the devices registered by the PCWT command	515 (&H203)	Reading of Q/QnA series device memory
4(&H4)	Reading of extension file register data		
5(&H5)	Monitoring the extension file register registered by the PCWT command		
7(&H7)	Reading of continuous address designation data in the extension file register		
8(&H8)	Reading of sequence programs	-	Cannot be replaced with Q/QnA series.
9(&H9)	Reading of microcomputer programs		
10(&HA)	Reading of comment data		
11(&HB)	Reading of extension comment data		
12(&HC)	Reading of the buffer memories of a special function module	533 (&H215)	Reading of the buffer memories of a Q/QnA series intelligent function module
13(&HD)	Reading of the model name of a programmable controller CPU	513 (&H201)	Reading of the model name of a Q/QnA programmable controller CPU
14(&HE)	Reading of parameter data (Reading of MELSECNET/10 parameters)	-	Cannot be replaced with Q/QnA series.
21(&H15)	Reading of network information		
22(&H16)	Reading of routing parameters		

(d) PCWT command

Processing codes used in the AD51H-S3		Processing codes used in the QD51(-R24)	
Processing Code	Contents	Processing Code	Contents
2(&H2)	Device memory monitor registration	515 (&H203)	Writing of Q/QnA series device memory
3(&H3)	Random writing to device memory		
4(&H4)	Writing to extension file register		
5(&H5)	Expansion file register monitor registration		
6(&H6)	Random writing to extension file register		
7(&H7)	Continuous address designation data writing to extension file register		
8(&H8)	Writing of sequence programs	-	Cannot be replaced with Q/QnA series.
9(&H9)	Writing of microcomputer programs		
10(&HA)	Writing of comment data		
11(&HB)	Writing of extension comment data		
12(&HC)	Writing of the buffer memories of a special function module	533 (&H215)	Writing to the buffer memories of a Q/QnA series intelligent function module
14(&HE)	Writing of parameter data (Writing of MELSECNET/10 parameters)	-	Cannot be replaced with Q/QnA series.
15(&HF)	Analysis of parameter data		

(5) DATE$ function

The processing of the DATE$ function differs. Therefore, modify the BASIC program.

Processing	A1SD51S	QD51(-R24)	Action
Reading	Reads only the last two digits of the year. When the last two digits is 90 or greater, the first two digits is 19. When the last two digits is 89 or lower, the first two digits is 20.	Reads all the four digits of the year.	Modify the program to use the four digits for processing.
Writing	Writes only the last two digits of the year.	Writes all the four digits of the year.	Selects the four digits.

4.6.3 Replacement of intelligent communication module AD51-S3

The BASIC program language of the QD51(-R24) differs from that of the AD51-S3. For this reason, the program of the AD51-S3 programmed with GPC-BASIC is not reused for the QD51(-R24). Create a new program with AD51H-BASIC.

5 EXTERNAL DIMENSIONS

5.1 External Dimensions

For the external dimensions of each module described in this handbook, refer to the user's manual of each module.
For the external dimensions of base units, refer to the following handbooks.

No.	Handbook	Handbook Number	Module to be replaced		
			A/QnA	AnS/QnAS	Q
1	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook	L-08043ENG	○	×	○
2	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook	L-08219ENG	×	○	○

Memo

APPENDICES

Appendix 1 Spare Parts Storage

(1) The general specifications of programmable controllers are as follows. Please do not store spare parts under a high temperature or high humidity condition, even within the range guaranteed by the specifications.

Storage ambient temperature	-20 to 75 °C
Storage ambient humidity	10 to 90%, no condensation

(2) Store in a place avoiding direct sunlight.

(3) Store under a condition with no dust or corrosive gas.

(4) The capacity of the batteries (such as an A6BAT battery and an A8BAT battery) or a lithiumcoin battery (commercially available) for memory card is decreased by its self-discharging even when it is not used. Replace it with new one in 5 years as a guideline.

(5) Among power supply modules or CPU modules with built-in power supply that use any aluminum electrolytic capacitor, the characteristics of the modules listed below will be deteriorated if they are left un-energized for a long time. Therefore, take the following measures.

Product	Model
CPU module (Power supply built-in type)	A1NCPU, A1NCPUP21, A1NCPUR21, A1NCPUP21-S3, A2CCPU, A2CCPUP21, A2CCPUR21, A2CCPUC24, A2CCPUC24-PRF, A2CJCPU-S3
	A1SJHCPU
Power supply module	A61P, A61PEU, A61P-UL, A62P, A62PEU, A63P, A68P, A61RP, A67RP, A2CJ66P
	A1S61PN, A1S62PN, A1S63P
Analog module	A62DA, A62DA-S1
	A1S64AD, A1S68AD, A1S62DA, A1S68DAI, A1S68DAV, A1S63ADA, A1S66ADA

[Measures for preventing aluminum electrolytic capacitor characteristics deterioration]

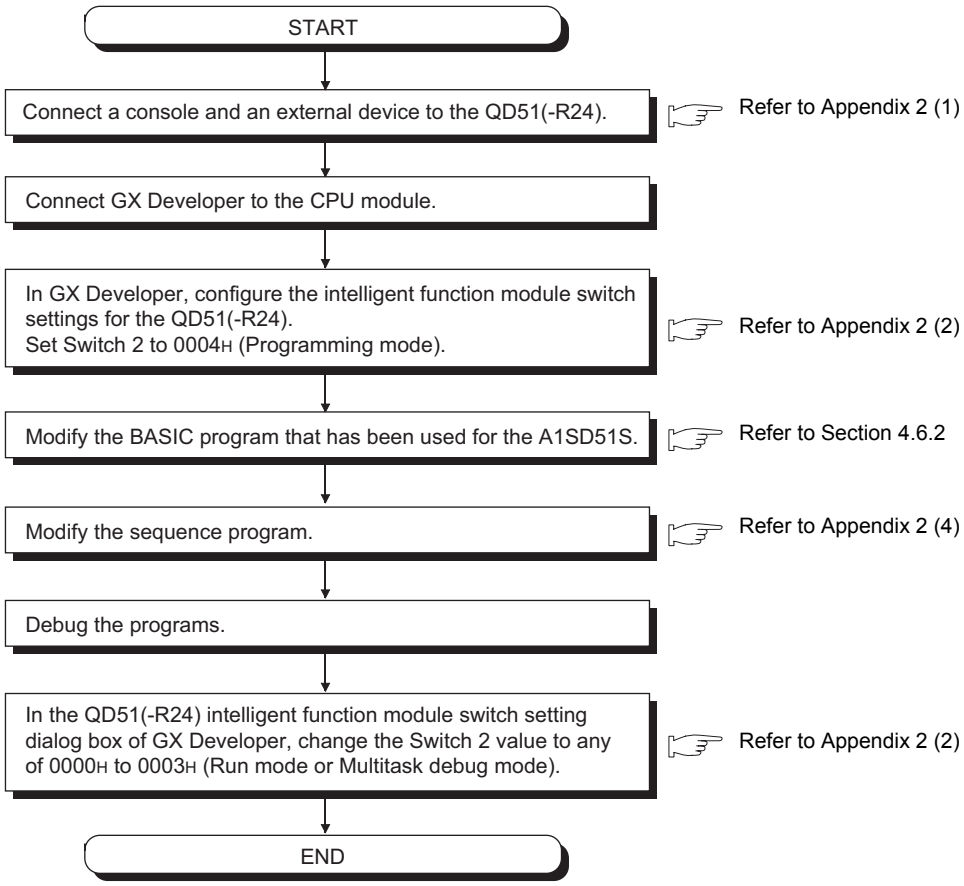
Apply the rated voltage to the aluminum electrolytic capacitor for several hours to activate it. Or, rotate products at the periodic inspection (in every 1 to 2 years).

[Reference]

The life of an aluminum electrolytic capacitor, even if not used and under a normal temperature, decreases approximately 4 times slowly than the case when it is energized.

Appendix 2 Procedure for Replacing the A1SD51S with the QD51(-R24)

The following is the procedure for replacing the A1SD51S with the QD51(-R24).


START
Connect a console and an external device to the QD51(-R24).
Refer to Appendix 2 (1)
Connect GX Developer to the CPU module.
In GX Developer, configure the intelligent function module switch settings for the QD51(-R24).
Set Switch 2 to 0004H (Programming mode).
Refer to Appendix 2 (2)
Modify the BASIC program that has been used for the A1SD51S.
Refer to Section 4.6.2
Modify the sequence program.
Refer to Appendix 2 (4)
Debug the programs.
In the QD51(-R24) intelligent function module switch setting dialog box of GX Developer, change the Switch 2 value to any of 0000H to 0003H (Run mode or Multitask debug mode).
Refer to Appendix 2 (2)
END

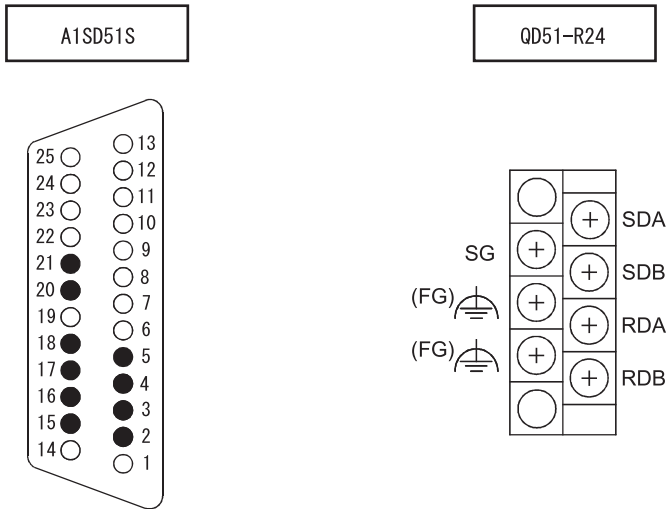
(1) Connecting a console and an external device to the QD51(-R24)

(a) Connection to the RS-232 interface

Since the same RS-232 interface specifications are applied to the QD51(-R24) and the A1SD51S, the existing cable and RS-232 converter can be reused.

(b) Connection to the RS-422/485 interface

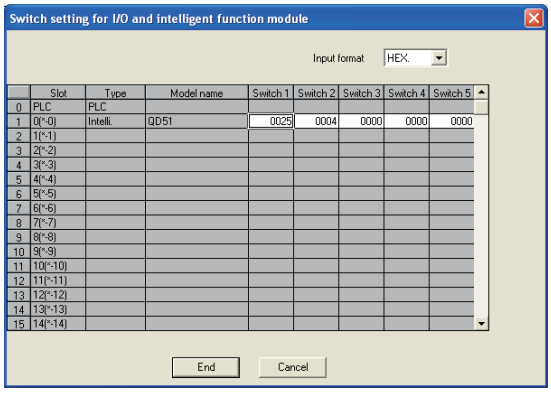
Because the QD51(-R24) uses a two-piece terminal block, the existing connector for the A1SD51S cannot be reused. In addition, wiring must be checked and changed since the signals are assigned to different positions.



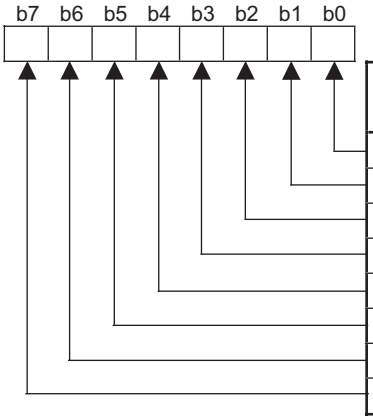
For connection details, refer to the Q Corresponding Intelligent Communication Module User's Manual, "RS-232 Interface Specifications".

(2) Setting the mode

The mode of the QD51(-R24) is set in the intelligent function module setting dialog box of GX Developer while the mode of the A1SD51S is set with the mode setting switch on the module.



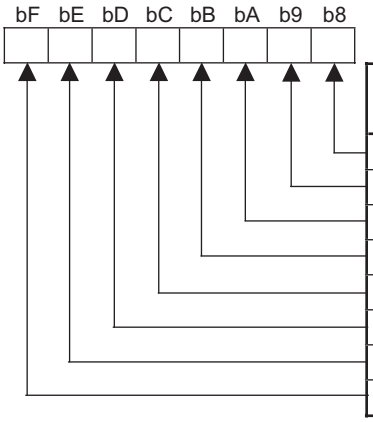
(a) Switch 1



Bit position	Contents		OFF(0)	ON(1)
b0	Console	Channel setting	Refer to *1	
b1				
b2		Software	Not used	Used
b3	Not used		Fixed on OFF	
b4	Console, debugger type		VT	VG
b5	Ctrl + C setting		Disabled	Enabled
b6	Not used		Fixed on OFF	
b7	Access possible time setting after Y reset		200 ms	2000 ms

*1 Console (Channel setting)

Bit position		Contents
b1	b0	
OFF	OFF	Without console
OFF	ON	With console CH.1
ON	OFF	With console CH.2
ON	ON	Setting impossible



Bit position	Contents		OFF(0)	ON(1)
b8	Not used		Fixed on OFF	
b9	Flash ROM write protection setting		Without	With
bA	Not used		Fixed on OFF	
bB				
bC	Debugger	Channel setting	Refer to *2	
bD				
bE		Software	Not used	Used
bF	Not used		Fixed on OFF	

*2 Debugger (Channel setting)

Bit position		Contents
bD	bC	
OFF	OFF	Without a debugger
OFF	ON	With debugger CH.1
ON	OFF	With debugger CH.2
ON	ON	Setting impossible

(b) Switch 2

Set value	Description	Remark
0000_H	Run mode	Mode for executing the BASIC program.
0001_H		
0002_H	Multitask debug mode	Mode for debugging by connecting a debugger.
0003_H		
0004_H	Programming mode	Mode for programming by connecting a console.
0005_H to $000F_H$	Setting prohibited	-

(c) Switch 3 to Switch 5

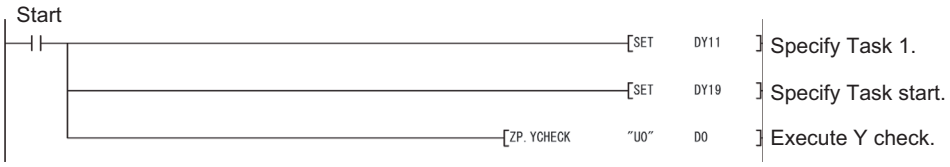
Set 0000_H.

(3) Modifying the BASIC program used for the A1SD51S

Programs used for the A1SD51S can be utilized for the QD51(-R24).
However, modification of the BASIC program may be required since the following setting items may be different between these models.

(4) Modifying the sequence program

When the Task start signal (Y19) has been used to start a task, add the YCHECK instruction in the sequence program.
On the A1SD51S, an interrupt occurs upon turn-ON of the Task start signal (Y19), which starts a task.
The QD51(-R24) monitors the Task start signal (Y19) at intervals of 10ms for starting a task.
By executing the YCHECK command as shown below, the task can be started at the same timing as the A1SD51S.



Appendix 3 Relevant Manuals

Appendix 3.1 Replacement Handbooks

(1) Transition Guide

No.	Manual name	Manual No.	Model code	
			A (Large Type)	AnS (Small Type)
1	Mitsubishi Programmable Controllers MELSEC-A/QnA Series Transition Guide	L(NA)08077E	○	×
2	Mitsubishi Programmable Controllers MELSEC-AnS/QnAS Series Transition Guide	L(NA)08236E	×	○

(2) Replacement Handbooks

No.	Manual name	Manual No.	Model code	
			A (Large Type)	AnS (Small Type)
1	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)	L-08043ENG	○	×
	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook (Fundamentals)	L-08219ENG	×	○
2	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Intelligent Function Modules)	L-08046ENG	○	×
	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook (Intelligent Function Modules)	L-08220ENG	×	○
3	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS Series (Small Type) to Q Series Handbook (Network Modules)	L-08048ENG	○	○
4	Transition from MELSEC-A/QnA (Large Type) Series, AnS/QnAS Series (Small Type) to Q Series Handbook (Communications)	L-08050ENG	○	○
5	Transition from MELSEC-A0J2H Series to Q Series Handbook	L-08060ENG	○	○
6	Transition from MELSECNET/MINI-S3, A2C (I/O) to CC-Link Handbook	L-08061ENG	○	○
7	Transition from MELSEC-I/OLINK to CC-Link/LT Handbook	L-08062ENG	○	○
8	Transition of CPUs in MELSEC Redundant System Handbook (Transition from Q4ARCPU to QnPRHCPU)	L-08117ENG	○	×

(3) Transition Examples

No.	Manual name	Manual No.	Model code	
			A (Large Type)	AnS (Small Type)
1	MELSEC-A/QnA (Large), AnS/QnAS (Small) Transition Examples	L(NA)08121E	○	×

(4) Others

No.	Manual name	Manual No.	Model code	
			A (Large Type)	AnS (Small Type)
1	Procedures for Replacing Positioning Module AD71 with QD75	FA-A-0060	○	×
2	Precautions for replacing A/QnA (large type) series CPU with Universal model QCPU	FA-A-0068	×	○

Appendix 3.2 A/AnS series

No.	Manual name	Manual No.	Model code
1	Computer Link Module Guidebook	SH-3510	13JE76
2	Computer Link Module User's Manual (Com.link func./Print.func.)	SH-3511	13JE77
3	For A Ethernet Interface Module User's Manual	SH-080192	13JR45
4	Intelligent communication module type AD51H-S3 User's Manual	IB-66401	13JE16
5	Type A1SD51S Intelligent communication module User's Manual	IB-66551	
6	Intelligent Communication Module type AD51-S3 User's Manual	IB-66189	13J655
7	GPC-BASIC SUPPLEMENTARY	IB-66214	13J766
8	GPC-BASIC SUPPLEMENTARY	IB-66100	13J636
9	AD51H-BASIC Programming Manual (Command)	SH-080090	13JF63
10	AD51H-BASIC Programming Manual (Debug and Compile)	SH-080091	13JF64

Appendix 3.3 QnA/QnAS series

No.	Manual name	Manual No.	Model code
1	Computer Link Module Guidebook	SH-3510	13JE76
2	Serial Communications Module User's Manual (Modem Function Additional Version)	IB-66612	13J825
3	For QnA Ethernet Interface Module User's Manual	SH-080146	13JR33

Appendix 3.4 Q series

No.	Manual name	Manual No.	Model code
1	Q Corresponding Serial Communication Module User's Manual (Basic)	SH-080006	13JL86
2	Q Corresponding Serial Communication Module User's Manual (Application)	SH-080007	13JL87
3	Q Corresponding MELSEC Communication Protocol Reference Manual	SH-080008	13JF89
4	Q Corresponding Ethernet Interface Module User's Manual (Basic)	SH-080009	13JL88
5	Q Corresponding Ethernet Interface Module User's Manual (Application)	SH-080010	13JL89
6	Q Corresponding Ethernet Interface Module User's Manual (Web function)	SH-080180	13JR40
7	GX Configurator-SC Version 2 Operating Manual (Protocol FB support function)	SH-080393E	13JU46
8	Q Corresponding Intelligent Communication Module User's Manual	SH-080089	13JR16
9	AD51H-BASIC Programming Manual (Command)	SH-080090	13JF63
10	AD51H-BASIC Programming Manual (Debug and Compile)	SH-080091	13JF64

Memo

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.
[Gratis Warranty Term]
The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.
[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
    1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
    2. Failure caused by unapproved modifications, etc., to the product by the user.
    3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
    4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
    5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
    6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
    7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
    Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

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Mitsubishi Programmable Controller

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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